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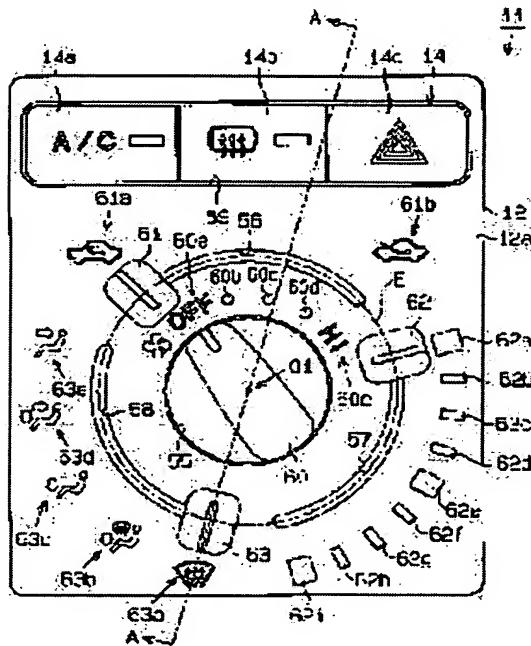
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(54) OPERATION SWITCH UNIT FOR VEHICLE

(57)Abstract:

PROBLEM TO BE SOLVED: An operation switch unit for a vehicle capable of reducing an installation space of a switching operation member, and miniaturizing the whole unit.

SOLUTION: In a design plate 12 of a controller unit 11, a rotary knob 60 is mounted rotatably on a shaft center O1. Three guide holes 56-58 are formed on the same virtual circle on the shaft center O1 as a center, and slide knobs 61-63 are slidably operably mounted on the guide holes 56-58.



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(57) [Abstract]

[Technical problem] The arrangement tooth space of a modification operating member can be made small, and the actuation switch unit for cars which can miniaturize the whole unit is offered.

[Means for Solution] In the design plate 12 of the controller unit controller unit 11, the rotation knob 60 is formed rotatable focusing on an axial center O1. an axial center O1 -- as a core -- the same virtual circle top -- three guide holes 56-58 -- preparing -- the guide holes 56-58 -- a slide -- the slide knobs 61-63 are formed operational.

[Claim(s)]

[Claim 1] In the actuation switch unit for cars equipped with the modification operating member which changes temperature, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member which changes whether the open air is incorporated in the car It prepares operational. the inside of each of said modification operating member -- at least one modification operating member -- rotation -- the inside of the remaining modification operating members -- at least one modification operating member -- a slide -- operational -- preparing -- said slide -- an operational modification operating member said rotation -- the rotation axial center of an operational modification operating member -- as a core -- the shape of radii -- a slide -- the actuation switch unit for cars characterized by having arranged operational.

[Claim 2] said slide -- an operational modification operating member -- those with two or more, and said each slide -- an operational modification operating member -- rotation -- the same virtual centering on rotation axial center of operational modification operating member circle top -- a slide -- the actuation switch unit for cars according to claim 1 characterized by having arranged operational.

[Claim 3] As opposed to two or more modification operating members arranged operational said same virtual circle top -- a slide -- the 1st detent which gives a feeling of moderation -- having -- said 1st detent -- said same virtual circle top -- a slide -- with the 1st moderation member prepared in two or more modification operating members arranged operational, respectively the 1st moderation surface part material to which the pressure welding of said 1st moderation member is carried out relatively -- having -- said 1st moderation surface part material -- rotation -- the actuation switch unit for cars according to claim 2 characterized by having arranged on the virtual circle centering on the rotation axial center of an operational modification operating member.

[Claim 4] said rotation -- an operational modification operating member -- those with two or more, among those at least two rotation -- the inside of claim 1 characterized by the rotation axial center of an operational modification operating member being the same thru/or claim 3 -- the actuation switch unit for cars given in any 1 term.

[Claim 5] The rotatable modification operating member of said plurality including the 1st modification operating member and the 2nd modification operating member whenever [second-article / which gives a feeling of moderation to said 1st modification operating member] A device, It has the 3rd detent which gives a feeling of moderation to said 2nd modification

operating member. Whenever [said second-article] a device It has a member whenever [second-article / which carries out / whenever / said second-article / a pressure welding to surface part material relatively to surface part material whenever / second-article / which is rotated according to the amount of rotation of said 1st modification operating member]. Said 3rd detent The 3rd moderation surface part material which rotates according to the amount of rotation of said 2nd modification operating member, It has the 3rd moderation member which carries out a pressure welding relatively to said 3rd moderation surface part material. Whenever [said second-article] a member and said 3rd moderation member The actuation switch unit for cars according to claim 4 characterized by carrying out the pressure welding in the common energization member to surface part material and said 3rd moderation surface part material, respectively whenever [said second-article].

[Claim 6] said rotation -- the inside of claim 1 characterized by having the pinion rotated according to the amount of rotation of an operational modification operating member, the rack which reciprocates by forward reverse rotation of said pinion, and the power transfer cable with which reciprocation of said rack is transmitted, and said rack reciprocating linearly thru/or claim 5 -- the actuation switch unit for cars given in any 1 term.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] In the actuation switch unit for cars equipped with the modification operating member which changes temperature, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member which changes whether the open air is incorporated in the car It prepares operational. the inside of each of said modification operating member -- at least one modification operating member -- rotation -- the inside of the remaining modification operating members -- at least one modification operating member -- a slide -- operational -- preparing -- said slide -- an operational modification operating member said rotation -- the rotation axial center of an operational modification operating member -- as a core -- the shape of radii -- a slide -- the actuation switch unit for cars characterized by having arranged operational.

[Claim 2] said slide -- an operational modification operating member -- those with two or more, and said each slide -- an operational modification operating member -- rotation -- the same virtual centering on rotation axial center of operational modification operating member circle top -- a slide -- the actuation switch unit for cars according to claim 1 characterized by having arranged operational.

[Claim 3] As opposed to two or more modification operating members arranged operational said same virtual circle top -- a slide -- the 1st detent which gives a feeling of moderation -- having -- said 1st detent -- said same virtual circle top -- a slide -- with the 1st moderation member prepared in two or more modification operating members arranged operational, respectively the 1st moderation surface part material to which the pressure welding of said 1st moderation member is carried out relatively -- having -- said 1st moderation surface part material -- rotation -- the actuation switch unit for cars according to claim 2 characterized by having arranged on the virtual circle centering on the rotation axial center of an operational modification operating member.

[Claim 4] said rotation -- an operational modification operating member -- those with two or more, among those at least two rotation -- the inside of claim 1 characterized by the rotation axial center of an operational modification operating member being the same thru/or claim 3 -- the actuation switch unit for cars given in any 1 term.

[Claim 5] The rotatable modification operating member of said plurality including the 1st modification operating member and the 2nd modification operating member whenever [second-article / which gives a feeling of moderation to said 1st modification operating member] A device, It has the 3rd detent which gives a feeling of moderation to said 2nd modification operating member. Whenever [said second-article] a device It has a member whenever [second-article / which carries out / whenever / said second-article / a pressure welding to surface part material relatively to surface part material whenever / second-article / which is rotated according to the amount of rotation of said 1st modification operating member]. Said 3rd detent The 3rd moderation surface part material which rotates according to the amount of rotation of said 2nd modification operating member, It has the 3rd moderation member which carries out a pressure welding relatively to said 3rd moderation surface part material. Whenever [said second-article] a member and said 3rd moderation member The actuation switch unit for

cars according to claim 4 characterized by carrying out the pressure welding in the common energization member to surface part material and said 3rd moderation surface part material, respectively whenever [said second-article].

[Claim 6] said rotation -- the inside of claim 1 characterized by having the pinion rotated according to the amount of rotation of an operational modification operating member, the rack which reciprocates by forward reverse rotation of said pinion, and the power transfer cable with which reciprocation of said rack is transmitted, and said rack reciprocating linearly thru/or claim 5 -- the actuation switch unit for cars given in any 1 term.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the actuation switch unit for cars used for a car.

[0002]

[Description of the Prior Art] Conventionally, the car, especially the automobile are equipped with the actuation switch unit for cars (henceforth a controller unit) which air-conditioning in the car.

[0003] There are some which are shown in drawing 22 as such a controller unit. As for this controller unit 181, four slide knob devices 182,183,184,185 are established. the oblong guide holes 182a, 183a, 184a, and 185a with which said each slide knob devices 182–185 were formed in the design side 186 which is a field exposed towards in the car [in the controller unit 181], and the inside of the guide hole 182a – 185a -- a slide -- it has the movable slide tongues 182b, 183b, 184b, and 185b.

[0004] Said slide tongues 182b–185b are connected with other devices which are not illustrated through the power transfer cables 182c, 183c, 184c, and 185c. Said each slide knob devices 182–185 operate other devices, and it is made to have modification of the diffuser of a wind, modification of temperature, modification of whether to incorporate the open air in the car, and a change of airflow made by making the slide tongues 182b–185b slide.

[0005] And the slide knob devices 182–185 are equipped with the detent which it is separate respectively and is not illustrated. The detent is equipped with the moderation surface part material which is not illustrated and the moderation member which is not illustrated, and, specifically, the pressure welding of said moderation member is carried out to said moderation surface part material in the energization member which is not illustrated.

[0006] Moreover, there are some which are shown in drawing 23 as controller units other than controller unit 181. As for this controller unit 191, the slide knob device 192 and the rotation knob device 193,194,195 are established.

[0007] the inside of oblong guide hole 192a by which said slide knob device 192 was formed in the design side 196 which is a field exposed towards in the car [in the controller unit 191], and its guide hole 192a -- a slide -- it has movable slide tongue 192b. Said slide tongue 192b is connected with other devices which are not illustrated through the power transfer cable which is not illustrated, and it is made for the slide knob device 192 to have it changed by making slide tongue 192b slide whether other devices are operated and the open air is incorporated in the car.

[0008] And said rotation knob devices 193–195 are equipped with the rotation knobs 193a, 194a, and 195a prepared rotatable, and said rotation knobs 193a–195a are arranged in the design side 196. It is made for said rotation knob devices 193–195 to have modification of temperature, modification of airflow, and the diffuser of a wind changed by rotating rotatable knobs 193a–195a.

[0009] Moreover, said rotation knob devices 193–195 are equipped also with the pinion members 193b, 194b, and 195b rotated according to the amount of rotation of the rotation knobs 193a–

195a, and the power conversion members 193c, 194c, and 195c which change forward reverse rotation of said pinion members 193b-195b into reciprocation as shown in drawing 24.

[0010] In addition, with this operation gestalt, forward rotation says a clockwise rotation and inverse rotation says a counterclockwise rotation. the supporter material which does not illustrate said power conversion members 193c-195c -- a round trip -- it has the sector-gear sections 193d, 194d, and 195d which are supported rockable and gear with said pinion members 193b-195b. The sector-gear sections 193d-195d of the shape of said radii are formed in the shape of [centering on the rotation supporting point of said power conversion members 193c-195c] radii, and the power conversion members 193c-195c carry out both-way rocking so that radii may be drawn.

[0011] Consequently, rotation movement of the rotation knobs 193a-195a is transmitted to the power transfer cables 193e, 194e, and 195e connected with the power conversion members 193c-195c as reciprocation through the power conversion members 193c-195c.

[0012]

[Problem(s) to be Solved by the Invention] However, as for said controller unit 181, the slide knob devices 182-185 are arranged according to the individual in the design side 186, respectively. Therefore, in order to arrange the slide tongues 182b-185b, the design side 186 needed to be enlarged. On the other hand, also in the controller unit 191, the slide knob device 192 and the rotation knob devices 193-195 are arranged according to the individual in the design side 196, respectively. Therefore, in order to arrange slide tongue 192b and the rotation knobs 193a-195a, the design side 186 needed to be enlarged.

[0013] Therefore, this invention is made in view of the situation mentioned above, that purpose can make small the arrangement tooth space of a modification operating member, and it is in offering the actuation switch unit for cars which can miniaturize the whole unit as a result.

[0014]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention according to claim 1 In the actuation switch unit for cars equipped with the modification operating member which changes temperature, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member which changes whether the open air is incorporated in the car It prepares operational. the inside of each of said modification operating member -- at least one modification operating member -- rotation -- the inside of the remaining modification operating members -- at least one modification operating member -- a slide -- operational -- preparing -- said slide -- an operational modification operating member -- said rotation -- the rotation axial center of an operational modification operating member -- as a core -- the shape of radii -- a slide -- let it be a summary to have arranged operational.

[0015] invention according to claim 2 -- the actuation switch unit for cars according to claim 1 -- setting -- said slide -- an operational modification operating member -- those with two or more, and said each slide -- an operational modification operating member -- rotation -- the same virtual centering on rotation axial center of operational modification operating member circle top -- a slide -- let it be a summary to have arranged operational.

[0016] Invention according to claim 3 is set to the actuation switch unit for cars according to claim 2. As opposed to two or more modification operating members arranged operational said same virtual circle top -- a slide -- the 1st detent which gives a feeling of moderation -- having -- said 1st detent -- said same virtual circle top -- a slide -- with the 1st moderation member prepared in two or more modification operating members arranged operational, respectively the 1st moderation surface part material to which the pressure welding of said 1st moderation member is carried out relatively -- having -- said 1st moderation surface part material -- rotation -- let it be a summary to have arranged on the virtual circle centering on the rotation axial center of an operational modification operating member.

[0017] invention according to claim 4 -- the inside of claim 1 thru/or claim 3 -- the actuation switch unit for cars given in any 1 term -- setting -- said rotation -- an operational modification operating member -- those with two or more, among those at least two rotation -- the rotation axial center of an operational modification operating member makes the same thing a summary.

[0018] Invention according to claim 5 is set to the actuation switch unit for cars according to claim 4. The rotatable modification operating member of said plurality Including the 1st modification operating member and the 2nd modification operating member, whenever [second-article / which gives a feeling of moderation to said 1st modification operating member] A device, It has the 3rd detent which gives a feeling of moderation to said 2nd modification operating member. Whenever [said second-article] a device It has a member whenever [second-article / which carries out / whenever / said second-article / a pressure welding to surface part material relatively to surface part material whenever / second-article / which is rotated according to the amount of rotation of said 1st modification operating member]. Said 3rd detent The 3rd moderation surface part material which rotates according to the amount of rotation of said 2nd modification operating member, Having the 3rd moderation member which carries out a pressure welding relatively to said 3rd moderation surface part material, a member and said 3rd moderation member make it a summary to carry out the pressure welding in the common energization member to surface part material and said 3rd moderation surface part material, respectively whenever [said second-article] whenever [said second-article].

[0019] invention according to claim 6 -- the inside of claim 1 thru/or claim 5 -- the actuation switch unit for cars given in any 1 term -- setting -- said rotation -- it has the pinion rotated according to the amount of rotation of an operational modification operating member, the rack which reciprocates by forward reverse rotation of said pinion, and the power transfer cable with which reciprocation of said rack is transmitted, and let it be a summary for said rack to reciprocate linearly.

(Operation) therefore, invention according to claim 1 -- setting -- a slide -- an operational modification operating member -- rotation -- the rotation axial center of an operational modification operating member -- as a core -- the shape of radii -- a slide -- it is supposed that it is operational.

[0020] invention according to claim 2 -- setting -- an operation according to claim 1 -- in addition, two or more slides of each -- an operational modification operating member -- rotation -- the same virtual centering on rotation axial center of operational modification operating member circle top -- a slide -- it is supposed that it is operational.

[0021] invention according to claim 3 -- setting -- an operation according to claim 2 -- in addition, rotation -- the pressure welding of two or more 1st moderation members is carried out to the 1st moderation surface part material arranged on the virtual circle centering on the rotation axial center of an operational modification operating member. consequently, the same virtual circle top -- a slide -- a feeling of moderation participates in two or more modification operating members arranged operational.

[0022] invention according to claim 4 -- setting -- the inside of claim 1 thru/or claim 3 -- an operation given in any 1 term -- in addition, two or more rotation -- the operational modification operating member was prepared so that a rotation axial center might become the same. namely, two or more rotation -- it is prepared in the form where an operational modification operating member is piled up.

[0023] In invention according to claim 5, since the pressure welding of the surface part material is carried out [whenever / second-article] to the member whenever [second-article] in the energization member if the 1st modification operating member is rotated in addition to an operation according to claim 4, a feeling of moderation is obtained by the 1st modification operating member. Moreover, since the pressure welding of the 3rd moderation member and the 3rd moderation surface part material is carried out in the energization member if the 2nd modification operating member is rotated, a feeling of moderation is obtained by the 2nd modification operating member. And since the energization member to which the pressure welding of the energization member which carries out [whenever / said second-article] the pressure welding of the surface part material to a member whenever [said second-article], and said 3rd moderation member and said 3rd moderation surface part material is carried out is common, it is independent respectively and the components mark of the actuation switch unit for cars are reduced compared with the case where an energization member is prepared.

[0024] invention according to claim 6 -- setting -- the inside of claim 1 thru/or claim 5 -- an

operation given in any 1 term -- in addition, rotation -- if an operational modification operating member is rotated, a pinion will be rotated similarly. If said pinion carries out forward reverse rotation, a rack will reciprocate linearly. Linear reciprocation of said rack is transmitted to a power transfer cable.

[0025]

[Embodiment of the Invention] (The 1st operation gestalt) The 1st operation gestalt which materialized this invention is hereafter explained according to drawing 1 – drawing 6.

[0026] In addition, the back side which intersects perpendicularly with space the near side which intersects left-hand side and the bottom perpendicularly with the bottom, and intersects [right-hand side / in drawing 1 of this operation gestalt and drawing 7 of the 2nd operation gestalt mentioned later] the bottom perpendicularly with the bottom and space in right-hand side and left-hand side a before side is made into the backside.

[0027] Drawing 1 shows the front face of the actuation switch unit 11 for cars of this operation gestalt (henceforth a controller unit), and as shown in drawing 2, said controller unit 11 is equipped with the design plate 12, the case body 13, and the switching and balancing box 14.

[0028] Said case body 13 is being fixed to the holddown member which the interior of the instrument panel with which nothing and a car do not illustrate the abbreviation square box-like one in which the last side face carried out opening does not illustrate. The backside [said case body 13] side attachment wall is formed in the shape of an abbreviation square.

[0029] As shown in drawing 2 and 3, in the backside [said case body 13] side attachment wall, the center of abbreviation is extruded towards the front, roofed cylinder-like stowage 13a is formed, and through tube 13b of a circle configuration is formed in the center section of this stowage 13a.

[0030] A substrate 15 is fixed to the backside [said case body 13], and through tube 15a is formed in the abbreviation center section of a substrate 15. As shown in drawing 6, the fixed electrodes 16a, 16b, 16c, and 16d arranged in the shape of [four] a radiation focusing on through tube 15a in the last side face of said substrate 15 are being fixed to abbreviation regular intervals. Said fixed electrodes 16a–16d are formed from the conductive metal.

[0031] Said fixed electrode 16a is arranged a little from the upper part on left-hand side to through tube 15a, and each fixed electrode is arranged in fixed electrodes [16b, 16c, and 16d] order from fixed electrode 16a at the circumference of a clockwise rotation. 16d of said fixed electrodes is arranged at the abbreviation upper right to through tube 15a. As shown in drawing 3, a said fixed electrodes [16a–16d] end penetrates a substrate 15, and is installed to the backside [the substrate 15]. In addition, drawing 3 shows only the condition of 16d of fixed electrodes.

[0032] Moreover, as circular ring-like common electrode 16e is formed in the periphery of through tube 15a and it is shown in drawing 3, the upper limit periphery section of common electrode 16e penetrates a substrate 15 in the last side face of said substrate 15, and is installed in it to the backside [the substrate 15].

[0033] As shown in drawing 2 and 3, the rotation object 17 is arranged between said stowage 13a and substrates 15. Said rotation object 17 was formed in the core of said disk section 17a and disk section 17a order both sides, and is equipped with 17d of receipt holes each other formed in the shanks 17b and 17c of the same axle, and the peripheral face of said disk section 17a.

[0034] Shank 17c of said rotation object 17 is supported by through tube 15a of said substrate 15 rotatable, and shank 17b of the rotation object 17 is inserted in through tube 13b of the case body 13. And disk section 17a of the rotation object 17 is contained in stowage 13a of said case body 13.

[0035] As shown in drawing 3, the sliding electrode 19 which becomes a backside [disk section 17a of said rotation object 17] side face from the conductive metal energized towards the substrate 15 by the spring 18 is arranged, and the pressure welding of the sliding electrode 19 is always carried out to common electrode 16e of a before [a substrate 15] side side face. And when said rotation object 17 rotates focusing on the axial center O1, the sliding contact of said sliding electrode 19 is made to be carried out alternatively to fixed electrodes 16a–16d (refer to

drawing 6). In addition, an axial center O1 is equivalent to a rotation axial center.

[0036] While the moderation ball 20 is contained possible [frequent appearance] by 17d of receipt holes of said rotation object 17, the spring 21 which turns this moderation ball 20 to the method of outside, and energizes it is contained. The pressure welding of said moderation ball 20 is always made to be carried out to the inner skin of stowage 13a of the case body 13. As shown in drawing 3 and 5, inner skin of said stowage 13a is made into the moderation side 22, and, as for this moderation side 22, five moderation crevices 22a, 22b, 22c, 22d, and 22e are formed. And if the moderation ball 20 engages with said moderation crevices 22b-22e, the pressure welding of said sliding electrode 19 will be made to be carried out to fixed electrodes 16a-16d alternatively (refer to drawing 6).

[0037] As shown in drawing 2 and 3, in the periphery of shank 17b of the rotation object 17, three rotation levers 30, 31, and 32 are formed, and migration to a cross direction is regulated in stop pawl 17e by which these rotation levers 30-32 were formed in the periphery of said shank 17b. The through tubes 30a, 31a, and 32a of a circle configuration are formed in the end face section of said rotation levers 30-32, and outer fitting of these through tubes 30a-32a is carried out to it rotatable at shank 17b of said rotation object 17. The knob attachment sections 30b, 31b, and 32b in which the point of said rotation levers 30-32 was crooked towards the front are formed.

[0038] As shown in drawing 1 and 4 (a), said rotation levers 30-32 are that rotation is regulated by the guide holes 56-58 mentioned later, respectively, and are made rotatable in each range at the upper left of abbreviation from the abbreviation lower part and the abbreviation lower part from the abbreviation upper right from the abbreviation upper left, and the abbreviation upper right on the basis of shank 17b of said rotation object 17.

[0039] Moreover, as shown in drawing 2 and 3, towards back, the rectangle-like piece fixed parts 30c, 31c, and 32c of moderation carry out louvering, and crookedness formation is carried out so that the through tube which makes the shape of an abbreviation KO typeface may be ****(ed) by the pars intermedia (middle at a end face and a tip) of the rotation levers 30-32.

[0040] As shown in drawing 3 and 4 (a), the end section of the pieces 33, 34, and 35 of moderation as the 1st moderation member which consists of a metal of owner elasticity is being fixed to said piece fixed parts 30c-32c of moderation. The projected parts 33a, 34a, and 35a of the shape of a semi-sphere extruded towards the radiation direction focusing on the axial center O1 of the rotation object 17 near the point of said pieces 33-35 of moderation are formed. The pressure welding of these projected parts 33a-35a is always carried out to the moderation side 37 mentioned later by energization of the pieces 33-35 of moderation of a cantilever condition.

[0041] Furthermore, the cable attachment sections 30d, 31d, and 32d are formed in said rotation levers 30-32. By the way, in the backside [said case body 13] side attachment wall, protrusion formation of the moderation side formation section 36 of the shape of a cylinder which made the axial center O1 the axial center is carried out towards the front at the periphery of said stowage 13a. In addition, the moderation side formation section 36 is equivalent to the 1st moderation surface part material. The 1st detent consists of said pieces 33-35 of moderation, and the moderation side formation section 36.

[0042] As shown in drawing 4 (a) and 4 (b), inner skin of said moderation side formation section 36 is made into the moderation side 37, and 16 moderation crevices 38a, 38b, 39a-39i, and 40a-40e are formed in this moderation side 37. Said moderation crevice 38b is arranged at the upper right on the basis of shank 17b of said rotation object 17, and each moderation crevice is arranged from this moderation crevice 38b at the clockwise rotation in order of the moderation crevices 39a-39i, 40a-40e, and 38a. Said moderation crevice 38a is arranged at the upper left on the basis of said shank 17b.

[0043] He is trying to engage projected part 33a of the piece 33 of moderation, and is trying, as for the moderation crevices 39a-39i, for projected part 34a of the piece 34 of moderation to be engaged by said moderation crevices 38a and 38b. Moreover, he is trying, as for said moderation crevices 40a-40e, to engage projected part 35a of the piece 35 of moderation.

[0044] Furthermore, three cable attaching parts 45, 46, and 47 are projected and formed in the backside [said case body 13] side attachment wall towards the front. Said cable attaching parts

45–47 are arranged the upper left of a backside [the case body 13] side attachment wall, the upper right, and near [each] the lower right edge, and are equipped with the piece of fastening of a pair. Fastening immobilization of the outer cables 48a, 49a, and 50a of cables 48, 49, and 50 is carried out in a pair each of pieces of fastening at said cable attaching parts 45–47.

[0045] Said cables 48–50 are equipped with the inner cables 48b, 49b, and 50b inserted in the outer cables 48a–50a and in outer cable 48a – 50a. The point of said inner cables 48b–50b is connected with 30d – 32d of cable attachment sections of the rotation levers 30–32 rotatable. And he is trying for the inner cables 48b–50b to slide on the inside of outer cable 48a – 50a according to the amount of rotation of said rotation levers 30–32.

[0046] As shown in drawing 1 and 2, said design plate 12 is being fixed ahead of said case body 13, and, as for this design plate 12, the upper part [configuration / of the case body 13 / appearance] is formed for a long time. The rotation knob mounting hole 55, the guide holes 56, 57, and 58, and the switch mounting hole 59 are established in said design plate 12.

[0047] In the case body 13 of the design plate 12 upper part, and the part which has not countered, said switch mounting hole 59 is formed so that it may extend in a longitudinal direction. The switching and balancing box 14 fixed above the case body 13 is arranged at the backside [said switch mounting hole 59]. Three press switches 14a, 14b, and 14c are formed in the front flank of said switching and balancing box 14, and these press switches 14a–14c are inserted in it towards the front from the back of the switch mounting hole 59.

[0048] In design side 12a of said design plate 12, said rotation knob mounting hole 55 and the guide holes 56–58 are arranged to the tooth space of a said case body 13 and the part which countered, the shape of i.e., an abbreviation square. Said rotation knob mounting hole 55 is a hole of a circle configuration, and he is trying for its core of a hole to correspond with the axial center O1 of said rotation object 17.

[0049] By the way, as shown in drawing 2 and 3, in shank 17b of said rotation object 17, compared with the back part, a front part has a small path and is formed [e / stop pawl 17] in the shape of the square pole from said stop pawl 17e. Hereafter, the part of the shape of this square pole is called 17f of rotation knob attachment sections. The rotation knob 60 is fixed to 17f of said rotation knob attachment sections, and this rotation knob 60 is arranged so that it may project to design side 12a. the modification operating member by which said rotation knob 60 changes airflow, and rotation -- it is equivalent to an operational modification operating member.

[0050] as shown in drawing 1 , said rotation knob 60 shows alternatively OFF location 60a prepared in design side 12a of the design plate 12, and 1st airflow location 60b – 4th airflow location 60e -- as -- rotation -- it is made operational.

[0051] Said guide holes 56–58 are formed so that it may be located on the same virtual circle E centering on said axial center O1. It is formed on the basis of the axial center O1 on said same virtual circle E, respectively, guide covering [said / 56–58] them over the abbreviation upper left from the abbreviation lower part from the abbreviation upper right from the abbreviation upper left, and the abbreviation upper left, and an abbreviation lower part. The point of the knob attachment sections 30b–32b of said rotation levers 30–32 is inserted in said guide holes 56–58 towards the front from back (only knob attachment section 32b is illustrated in drawing 3), and the slide knobs 61–63 are being fixed to the point.

[0052] said slide knobs 61–63 are equivalent to the modification operating member which changes whether the open air is incorporated in the car, the modification operating member which changes temperature, and the modification operating member which changes the diffuser of a wind respectively -- carrying out -- and the slide knobs 61–63 -- three persons -- a slide -- it is equivalent to an operational modification operating member.

[0053] said slide knob 61 shows alternatively air circulation location 61a prepared in design side 12a of the design plate 12, and open air inhalation location 61b -- as -- a slide -- it is made operational. moreover, said slide knob 62 shows alternatively 1st temperature location 62a prepared in said design side 12a – 9th temperature location 62i -- as -- a slide -- it is made operational. furthermore, said slide knob 63 shows alternatively 1st wind blowdown location 63a prepared in said design side 12a – 5th wind blowdown location 63e -- as -- a slide -- it is made

operational.

[0054] Next, the actuation relation of other members at the time of operating said rotation knob 60 is explained. If said rotation knob 60 is rotated as shown in drawing 1, and 2, 5 and 6, the rotation object 17 will rotate with rotation of the rotation knob 60. Under the present circumstances, if the rotation knob 60 shows OFF location 60a, the moderation ball 20 engages with moderation crevice 22a, and the sliding electrode 19 is located in the location of the sliding electrode 19 shown with the two-dot chain line of drawing 6.

[0055] Moreover, if said rotation knob 60 shows the 1st – the 4th airflow locations 60b–60e, the moderation ball 20 will engage with the moderation crevices 22b–22e, and the sliding electrode 19 will contact alternatively fixed electrodes 16a–16d. since [and] said sliding electrode 19 is always contacted to common electrode 16e -- the sliding electrode 19 -- minding -- common electrode 16e and a fixed electrode 16 -- a-16d is connected electrically. For this reason, that electrical signal is outputted to other equipments other than controller unit 11 which is not illustrated, and processing according to said the 1st – 4th airflow locations 60b–60e is performed.

[0056] Next, the actuation relation of other members at the time of operating said slide knob 61 is explained. If slide migration of said slide knob 61 is carried out as shown in drawing 1, 4 (a), and 4 (b), the rotation lever 30 will rotate an axial center O1 as a core. Under the present circumstances, if the slide knob 61 shows air circulation location 61a, projected part 33a of the piece 33 of moderation will engage with moderation crevice 38a of the moderation side 37, and, as for inner cable 48b of a cable 48, let attitude die length be predetermined die length according to the location of the rotation lever 30 at this time. Moreover, if the slide knob 61 shows open air inhalation location 61b, projected part 33a of the piece 33 of moderation will engage with moderation crevice 38b of the moderation side 37, and, as for inner cable 48b of a cable 48, let attitude die length be predetermined die length according to the location of the rotation lever 30 at this time.

[0057] Thus, the attitude die length of inner cable 48b according to the slide position of the slide knob 61 is mechanically transmitted to other equipments other than controller unit 11 which is not illustrated, and processing according to said air circulation location 61a and open air inhalation location 61b is performed.

[0058] Next, the actuation relation of other members at the time of operating said slide knob 62 is explained. If slide migration of said slide knob 62 is carried out as shown in drawing 1, 4 (a), and 4 (b), the rotation lever 31 will rotate an axial center O1 as a core. Under the present circumstances, if the slide knob 62 shows the 1st – the 9th temperature locations 62a–62i, projected part 34a of the piece 34 of moderation will engage with the moderation crevices 39a–39i of the moderation side 37, and, as for inner cable 49b of a cable 49, let attitude die length be predetermined die length according to the location of the rotation lever 31 at this time.

[0059] Thus, the attitude die length of inner cable 49b according to the slide position of the slide knob 62 is mechanically transmitted to other equipments other than controller unit 11 which is not illustrated, and processing according to said the 1st – 9th temperature locations 62a–62i is performed.

[0060] Next, the actuation relation of other members at the time of operating said slide knob 63 is explained. If slide migration of said slide knob 63 is carried out as shown in drawing 1, 4 (a), and 4 (b), the rotation lever 32 will rotate an axial center O1 as a core. Under the present circumstances, if the slide knob 63 shows the 1st – the 5th wind blowdown locations 63a–63e, projected part 35a of the piece 35 of moderation will engage with the moderation crevices 40a–40e of the moderation side 37, and, as for inner cable 50b of a cable 50, let attitude die length be predetermined die length according to the location of the rotation lever 32 at this time.

[0061] Thus, the attitude die length of inner cable 50b according to the slide position of the slide knob 63 is mechanically transmitted to other equipments other than controller unit 11 which is not illustrated, and processing according to said the 1st – 5th wind blowdown locations 63a–63e is performed.

[0062] Next, the effectiveness of the controller unit 11 of this operation gestalt is explained.

(1) the controller unit 11 of this operation gestalt -- design side 12a of the design plate 12 --

setting -- the rotation knob 60 -- as a core (it is a core about an axial center O1) -- the same virtual circle E top -- the slide knobs 61-63 -- a slide -- it has arranged movable. It follows, the controller unit 11 can make small the arrangement tooth space of design side 12a compared with the controller unit which was separate and has arranged three slide knobs and rotation knobs to the design side, consequently the controller unit 11 can be miniaturized compared with the above-mentioned controller unit.

[0063] Moreover, since the slide knobs 61-63 have arranged the rotation knob 60 possible [a slide on the same virtual circle] as a core, its appearance is beautiful. In addition, the arrangement pattern of the rotation knob 60 of this operation gestalt and the slide knobs 61-63 can be arranged very efficiently, when the design side 12a part which arranges the four knobs is an abbreviation square-like.

[0064] (2) It constitutes from a controller unit 11 of this operation gestalt so that the pressure welding of the three pieces 33-35 of moderation may be carried out to one moderation side 37, consequently a feeling of moderation was given to three slide knobs 61-63. By the way, in the controller unit 181 of the conventional technique, the slide knob devices 182-185 were equipped with the moderation member (not shown) and moderation surface part material (not shown) of a pair, respectively. Therefore, the controller unit 11 does not need to prepare moderation surface part material independently for every moderation member like the controller unit 181 of the conventional technique, respectively, and can simplify structure.

[0065] (3) In the controller unit 11 of this operation gestalt, the rotation knob 60 and the slide knobs 61-63 have been arranged possible [rotation or a slide] focusing on an axial center O1. Therefore, even if it operates each rotation knob 60 and the slide knobs 61-63, the distance of the 60-63 and knobO1 does not change (refer to drawing 1).

[0066] Therefore, three knobs can be rotated or slide operated in this direction focusing on an axial center O1 among the rotation knob 60 and the slide knobs 61-63 single hand at coincidence. In addition, this direction here means the direction of a clockwise rotation or a counterclockwise rotation focusing on an axial center O1.

[0067] For example, said rotation knob 60, the slide knob 61, and the slide knob 62 can be operated in this direction to coincidence. Moreover, the slide knob 61, the slide knob 62, and the slide knob 63 can be operated in this direction to coincidence.

[0068] (The 2nd operation gestalt) The 2nd operation gestalt which materialized this invention is hereafter explained according to drawing 7 - drawing 21 . Drawing 7 shows the front face of the actuation switch unit 71 for cars of this operation gestalt (henceforth a controller unit), and as shown in drawing 8 and 9, said controller unit 71 is equipped with the design plate 72, the case body 73, and the switching and balancing box 74.

[0069] Said case body 73 is being fixed to the holddown member which the interior of the instrument panel with which nothing and a car do not illustrate the abbreviation square box-like one in which the last side face carried out opening does not illustrate. As shown in drawing 9 and 11, near the center of backside [said case body 73] side-attachment-wall 73a, through tube 73b which makes a circle configuration is formed. In backside [said case body 73] side-attachment-wall 73a, pinion stowage 73c of a cross-section C form configuration is projected and formed in the periphery of said through tube 73b towards the front. The peripheral wall of said pinion stowage 73c is formed in the shape of [centering on the axial center O2 of through tube 73b] radii, and opening of the upper part of a peripheral wall is carried out. In addition, said axial center O2 is equivalent to a rotation axial center.

[0070] In backside [said case body 73] side-attachment-wall 73a, the square oblong long holes 75 and 76 are formed in the upper and lower sides of said pinion stowage 73c, and the guide barrels 75a and 76a which make the shape of a cross-section square are formed in this long hole 75 and 76. Said guide barrels 75a and 76a are formed so that it may project on order both sides to said backside side-attachment-wall 73a.

[0071] As shown in drawing 14 , the point of the rotation object 80 which has body 80a is inserted in said through tube 73b rotatable from the front. Stop pawl 80b is formed in the back end periphery of said rotation object 80, and this stop pawl 80b is engaging with the opening edge of through tube 73b. Though said rotation object 80 is rotatable to the case body 73,

migration in an axial center O2 is regulated by engagement at the opening edge of said stop pawl 80b and through tube 73b, and the contact to the apical surface of said pinion stowage 73c, and flange 81a mentioned later.

[0072] As shown in drawing 14 and 18 (a), in the periphery section of said rotation object 80, pinion section 80c as a pinion covers the perimeter, and is formed in the part corresponding to pinion stowage 73c.

[0073] Furthermore, in the periphery section of the rotation object 80, the crown wheel-like moderation surface part 81 adjoins ahead of pinion section 80c, and it is formed. Said moderation surface part 81 is equipped with flange 81a contacted by the apical surface of said pinion stowage 73c, and moderation side 81b located in a way outside the periphery of said pinion stowage 73c. The rotation object 80 equipped with said moderation side 81b is [whenever / second-article] equivalent to surface part material. This moderation side 81b is the periphery of flange 81a, and is formed in the backside side face. In addition, detailed explanation of moderation side 81b is mentioned later.

[0074] 80d of stop pawls is formed in the periphery near the front end of said rotation object 80. As shown in drawing 15 (b) and 18, the front end section of said rotation object 80 is covered in a hoop direction, and three engagement slot 80e is formed at equal intervals.

[0075] As shown in drawing 10 , 16 (a), 16 (b), and 17, above said rotation object 80, the reciprocation object 82 which has rack section 82a is formed in the inferior surface of tongue. Said rack section 82a is equivalent to a rack. Guided section 82b which projects towards back on a backside side face is formed in right-and-left both sides, and said reciprocation object 82 is inserted in guide barrel 75a in ***** guide section 82b, as shown in drawing 17 . Stop pawl 82c is formed in the point of **** guide section 82b, and said stop pawl 82c is engaging with the edge of guide barrel 75a. Rack section 82a of said reciprocation object 82 has geared with pinion section 80c of said rotation object 80 through up opening of said pinion stowage 73c. If said rotation object 80 carries out forward reverse rotation a core [the axial center O2], the reciprocation object 82 will reciprocate linearly along with guide barrel 75a according to the forward reverse rotation. 82d of cable attachment sections which project towards the front is formed in the upper part of said reciprocation object 82.

[0076] The cable attaching part 86 equipped with the piece of fastening of a pair is projected and formed in the upper left of backside [said case body 73] side-attachment-wall 73a towards the front, and this cable attaching part 86 is fastening outer cable 87a of a cable 87 to it in the piece of both fastening. Inner cable 87b is arranged possible [sliding], and the point of this inner cable 87b is connected with the interior of said outer cable 87a rotatable at 82d of cable attachment sections of the reciprocation object 82. Said inner cable 87b is equivalent to a power transfer cable. And he is trying for inner cable 87b to slide on the inside of outer cable 87a according to the both-way movement magnitude of said reciprocation object 82.

[0077] As shown in drawing 9 and 15 (a), the connection member 84 is formed ahead of said rotation object 80. The posterior part of said connection member 84 is tubed part 84a, and piece of three stops 84b prolonged in a radial focusing on an axial center O2 projects on the back end section periphery of this tubed part 84a, and it is formed in it. As shown in drawing 15 (b), this piece of stop 84b engages with engagement slot 80e of said rotation object 80, and said rotation object 80 and connection member 84 are formed so that it may both rotate focusing on an axial center O2.

[0078] As shown in drawing 9 and 15 (a), the through tube of the circle configuration which closed-end cylinder-like tray 84c is formed, and the anterior part of said connection member 84 opens for free passage with the centrum of said tubed part 84a in the center section of this tray 84c is formed. Furthermore, a part of the peripheral wall has projected on the periphery of said tray 84c towards the method of outside, and it forms 84d of stop sections in it by said projected peripheral wall.

[0079] The abbreviation doughnut-like rotation knob 85 is formed ahead of said connection member 84. the modification operating member and rotation said whose rotation knob 85 changes the diffuser of a wind -- it is equivalent to an operational modification operating member and the 1st modification operating member.

[0080] The same engagement crevice 85a (refer to drawing 15 (a)) as the appearance configuration of said connection member 84 is formed in a backside [said rotation knob 85] side face, and tray 84c of said connection member 84 and 84d of stop sections are engaging with this engagement crevice 85a. For this reason, the rotation knob 85 and the connection member 84 are formed so that it may both rotate focusing on an axial center O2. This piece of stop 84b engages with engagement slot 80e of said rotation object 80, and said rotation object 80 and connection member 84 are formed so that it may both rotate focusing on an axial center O2.

[0081] By the way, as shown in drawing 12, in backside [said case body 73] side-attachment-wall 73a, 73d of pinion stowages of a cross-section C form configuration is projected and formed in the periphery of said through tube 73b towards back. The peripheral wall of 73d of said pinion stowages is formed in the shape of radii considering an axial center O2 as a core, and opening of the lower part of a peripheral wall is carried out.

[0082] As shown in drawing 13 and 14, shank 90a with which the rotation member 90 was equipped is inserted in body 80a of said rotation object 80 rotatable from back. Stop pawl 90b is formed in the periphery of the longitudinal direction pars intermedia in said shank 90a, and this stop pawl 90b is engaging with 80f of engagement steps prepared in body 80a of said rotation object 80. Said rotation member 90 is relatively made rotatable around the axial center to the rotation object 80.

[0083] In said rotation member 90, pinion section 90c as a pinion is formed in the back end section of shank 90a, and this pinion section 90c is contained by 73d of pinion stowages of said case body 73.

[0084] Furthermore, as shown in drawing 13 and 18 (b), the crown wheel-like moderation surface part 91 is formed in the back end section of pinion section 90c in the rotation member 90. Said moderation surface part 91 is equipped with flange 91a contacted by the apical surface of 73d of said pinion stowages, and moderation side 91b located in the way outside [periphery] 73d of said pinion stowages. The rotation member 90 equipped with said moderation side 91b is equivalent to the 3rd moderation surface part material.

[0085] This moderation side 91b is the periphery of flange 91a, and is formed in the before side side face. Moderation side 91b and said moderation side 81b are arranged so that the diameter of inside and outside may be made into the diameter of the same and it may counter on both sides of backside side-attachment-wall 73a. In addition, detailed explanation of moderation side 91b is mentioned later. Moreover, in the rotation member 90, 90d of square pole-like connection sections is formed in the front end section of shank 90a.

[0086] As shown in drawing 9, and 10 and 13, ahead of said rotation member 90, the approximate circle column-like rotation knob 98 is formed. the modification operating member and rotation said whose rotation knob 98 changes temperature -- it is equivalent to an operational modification operating member and the 2nd modification operating member. The same engagement crevice 98a as the appearance configuration of 90d of connection sections of said rotation member 90 is formed in a backside [said rotation knob 98] side face, and 90d of said connection sections is engaging with this engagement crevice 98a. For this reason, the rotation knob 98 and the rotation member 90 are both rotated focusing on an axial center O2. The rotation knob 98 is ahead projected and arranged rather than the before [the rotation knob 85] side side face.

[0087] As shown in drawing 10 and 17, said reciprocation object 92 is established under said rotation member 90. In addition, although this reciprocation object 92 is a member which makes the same configuration as said reciprocation object 82, the sign is changed with the expedient top of explanation, and this operation gestalt. Therefore, the part of others which constitute the reciprocation object 92 makes common the single digit tail number of the part of others in the reciprocation object 82, and attaches the base of No. 90. In addition, when this reciprocation object 92 is attached to the controller unit 71, rack section 92a is located up in the reciprocation object 92, and guided section 92b is arranged so that it may be ahead located in the reciprocation object 92. Said rack section 92a is equivalent to a rack.

[0088] And said both ** guide section 92b is inserted in guide barrel 76a, and said stop pawl 92c is engaging with the edge of guide barrel 76a. Rack section 92a of said reciprocation object 92

has geared with pinion section 90c of said rotation member 90 through lower opening of 73d of said pinion stowages.

[0089] In addition, in drawing 17, although rack section 92a seems to have geared with pinion section 80c, since the number of teeth is the same, it hides and is not visible [with this operation gestalt / pinion section 90c] to the shade of pinion section 80c at pinion section 80c and the isomorphism of said, i.e., a diameter.

[0090] If said rotation member 90 carries out forward reverse rotation a core [the axial center O2], the reciprocation object 92 will reciprocate linearly along with guide barrel 76a according to the forward reverse rotation. As shown in drawing 12 and 17, the cable attaching part 96 equipped with the piece of fastening of a pair is projected and formed in the lower right of backside [said case body 73] side-attachment-wall 73a towards back, and outer cable 97a of a cable 97 is fastened to it in the piece of both fastening of this cable attaching part 96. Inner cable 97b is arranged possible [sliding], and the point of this inner cable 97b is connected with the interior of said outer cable 97a rotatable at 92d of cable attachment sections of the reciprocation object 92. Said inner cable 97b is equivalent to a power transfer cable. And he is trying for inner cable 97b to slide on the inside of outer cable 97a according to the both-way movement magnitude of said reciprocation object 92.

[0091] As shown in drawing 11, and 12 and 19, in backside [said case body 73] side-attachment-wall 73a, it is formed so that the cylinder-like moderation member stowage 101 may project forward and backward near the right-hand side of said through tube 73b. The through tube 100 of a circle configuration is formed in the moderation member stowage 101.

[0092] Slits 101a and 101b are formed in said moderation member stowage 101 order both ends, and moderation side 81b of said moderation surface part 81 and moderation side 91b of the moderation surface part 91 are inserted into them movable, respectively.

[0093] The spring 102 as a common energization member is contained in the through tube 100 of said moderation member stowage 101, and the moderation ball 103 as a member and the moderation ball 104 as the 3rd moderation member are contained by these spring 102 order both sides whenever [second-article]. A device consists of said rotation object 80 and a moderation ball 103 whenever [second-article], and the 3rd detent consists of said rotation member 90 and a moderation ball 104.

[0094] The pressure welding of said moderation ball 103,104 is always made to be carried out by energization of a spring 102 to moderation side 81b of the rotation object 80, and moderation side 91b of the rotation member 90. Five moderation crevices 105a, 105b, 105c, 105d, and 105e are formed in moderation side 81b of said rotation object 80 at equal intervals, and he is trying for these moderation crevices 105a-105e to engage with said moderation ball 103, as shown in drawing 15 (b) and 18 (a). Moreover, two or more moderation crevices 106 are formed in moderation side 91b of said rotation member 90 at equal intervals, and he is trying for this moderation crevice 106 to engage with said moderation ball 104.

[0095] By the way, as shown in drawing 9, and 11 and 20, in backside [said case body 73] side-attachment-wall 73a, protrusion formation of the guide wall 110 of the shape of radii centering on said axial center O2 is carried out towards the front at the left end section. Near the vertical both ends of said guide wall 110, the moderation crevices 110a and 110b are formed.

[0096] And in body 80a of said rotation object 80, the rocking member 107 of an abbreviation T typeface is formed in the periphery near the front end section. Ring section 107a was formed in the end face section of said rocking member 107, and this ring section 107a has fitted loosely into it free [rotation] at the periphery of said body 80a (drawing 9 , 14 reference). By 80d of said stop pawls, said ring section 107a is carried out as [regulate / migration of the cross direction of the rocking member 107].

[0097] Radii-like guided section 107b is formed in the point of said rocking member 107, and it gets down, and **** guide section 107b approaches to said guide wall 110, and is made to be rocked.

[0098] As shown in drawing 20 , 21 (a), and 21 (b), the piece 108 of moderation which consists of a metal which has elasticity is being fixed to the apical surface of said guided section 107b. 108a

projected towards the radiation direction focusing on the axial center O2 near the point of said piece 108 of moderation is formed, and the pressure welding of this projected part 108a is always carried out to said guide wall 110 by energization of the piece 108 of moderation of a cantilever condition. He is trying for projected part 108a to engage with the moderation crevices 110a and 110b of said guide wall 110 alternatively with rocking of said rocking member 107.

[0099] The slide knob 109 is projected and formed in the last side face of said guided section 107b, and cable attachment section 107c is formed in the pars intermedia at the end face of the rocking member 107, and a tip to make. Said slide knob 109 is equivalent to the modification operating member which changes whether the open air is incorporated in the car. said slide knob 109 -- said axial center O2 -- as a core -- the shape of radii -- a slide -- it is supposed that it is operational.

[0100] Near the lower left of backside [said case body 73] side-attachment-wall 73a, protrusion formation of the cable attaching part 111 equipped with the piece of fastening of a pair is carried out towards the front, and outer cable 112a of a cable 112 is fastened in the piece of both fastening of this cable attaching part 111. Inner cable 112b is arranged possible [sliding], and the point of this inner cable 112b is connected with the interior of said outer cable 112a rotatable at cable attachment section 107c of the rocking member 107. And he is trying for inner cable 112b to slide on the inside of outer cable 112a according to the amount of both-way rocking of said rocking member 107.

[0101] By the way, as shown in drawing 10, near the right-hand side edge of backside [said case body 73] side-attachment-wall 73a, the slit 113 prolonged in the vertical direction is formed. It is fixed to the part in which the slit 113 in said backside side-attachment-wall 73a was formed through the screw which the slide lever box 114 does not illustrate from back. Said slide lever box 114 is equipped with lever section 114a, and this lever section 114a is projected through said slit 113 to the front. said lever section 114a -- the vertical direction -- a slide -- it is supposed that it is movable.

[0102] As shown in drawing 8 and 9, a switching and balancing box 74 is fixed to the right-hand side of said case body 73, and three press switches 74a, 74b, and 74c are formed in this switching and balancing box 74 at the front flank. The design plate 72 is being fixed to the front flank of said case body 73, and, as for this design plate 72, the right part is formed in it for a long time from the appearance configuration of the case body 73.

[0103] As shown in drawing 7, the rotation knob mounting hole 120, the slide knob mounting hole 121, the guide hole 122, and the switch mounting hole 123 are formed in said design plate 72. Said rotation knob mounting hole 120 is a hole of a circle configuration, and he is trying for its core of a hole to correspond with said axial center O2. In said design side 72a, it is the periphery of the rotation knob mounting hole 120, and the directions mark S is formed in the upper location to said axial center O2. In said rotation knob mounting hole 120, the rotation knob 85 and the rotation knob 98 are arranged, and this rotation knob 85 and the rotation knob 98 are arranged so that it may project to design side 72a of the design plate 72.

[0104] A before [said rotation knob 98] side side face is covered in a hoop direction, and 1st temperature region mark 128a and 2nd temperature region mark 128b are prepared. The direction side edge section A of a counterclockwise rotation of 1st temperature region mark 128a and the clockwise rotation side edge section B of 2nd temperature region mark 128b are estranged, and the direction side edge section C of a clockwise rotation of 1st temperature region mark 128a and the counterclockwise rotation side edge section D of 2nd temperature region mark 128b are close.

[0105] Said rotation knob 98 is made rotatable in the range to the location where the location where 1st temperature region mark 128a counters to the directions mark S, the directions mark S, and 2nd temperature region mark 128b counter. That is, let the range where guide barrel 76a permits guided section 92b of the reciprocation object 92 be the rotation range of the rotation knob 98.

[0106] A before [said rotation knob 85] side side face is covered in a hoop direction, and 1st wind outlet mark 124a – 5th wind outlet mark 124e is prepared at equal intervals. Said rotation knob 85 is made rotatable in the range to the location where the location where 1st wind outlet

mark 124a counters to the directions mark S, the directions mark S, and 5th wind outlet mark 124e counter. That is, let the range where guide barrel 75a permits guided section 82b of the reciprocation object 82 be the rotation range of the rotation knob 85.

[0107] In design side 72a of said design plate 72, the slide knob mounting hole 121 of the shape of radii centering on an axial center O2 is formed in the left-hand side of the rotation knob mounting hole 120, and said slide knob 109 is arranged in this slide knob mounting hole 121. said slide knob 109 shows alternatively air circulation location 125a prepared in design side 72a of the design plate 72, and open air inhalation location 125b -- as -- a slide -- it is made operational.

[0108] And in design side 72a of the design plate 72, the guide hole 122 is formed in the right-hand side of said rotation knob mounting hole 120 along the vertical direction, and lever section 114a of said slide lever box 114 is inserted in this guide hole 122 from back to the front. The slide knob 126 as a modification operating member which changes airflow is being fixed to the point of said lever section 114a.

[0109] said slide knob 126 shows alternatively the OFF location 127a [which was prepared in design side 72a of the design plate 72], 1st airflow location 127b – 3rd airflow location of 127d -- as -- a slide -- it is made movable.

[0110] In design side 72a of said design plate 72, near the right-hand side edge, the long switch mounting hole 123 is formed in the vertical direction, and the press switches 74a–74c of a switching and balancing box 74 are inserted in this switch mounting hole 123 towards the front from back.

[0111] Next, the actuation relation of other members at the time of operating said rotation knob 98 is explained. If forward reverse rotation of said rotation knob 98 is carried out, forward reverse rotation of the rotation member 90 will be carried out with forward reverse rotation of the rotation knob 98. Then, when the moderation crevice 106 of moderation side 91b in the rotation member 90 faces said moderation ball 104, it is engaged, and it gives a feeling of moderation to the rotation knob 98.

[0112] Furthermore, if the rotation member 90 carries out forward reverse rotation, according to the forward reverse rotation, the reciprocation object 92 will reciprocate linearly. When the edge A in 1st temperature region mark 128a of said rotation knob 98 counters with the directions mark S, as shown in drawing 17, the reciprocation object 92 is located in the location shown with a two-dot chain line. Moreover, when the edge B in 2nd temperature region mark 128b of said rotation knob 98 counters with the directions mark S, as shown in drawing 17, the reciprocation object 92 is located in the location shown with a broken line.

[0113] And as for inner cable 97b of a cable 97, let attitude die length be predetermined die length according to the location of the longitudinal direction of the reciprocation object 92. Thus, the attitude die length of inner cable 97b according to the rotation location of the rotation knob 98 is mechanically transmitted to other equipments other than controller unit 71 which is not illustrated, and processing according to 1st temperature region mark 128a and 2nd temperature region mark 128b is performed.

[0114] Next, the actuation relation of other members at the time of operating said rotation knob 85 is explained. If forward reverse rotation of said rotation knob 85 is carried out, forward reverse rotation of the rotation object 80 will be carried out with forward reverse rotation of the rotation knob 85 through the connection member 84. Under the present circumstances, when 1st wind outlet mark 124a of the rotation knob 85 – 5th wind outlet mark 124e counter with the directions mark S, the moderation crevices 105a–105e of the rotation object 80 engage with the moderation ball 103 in the moderation member stowage 101.

[0115] Moreover, if the rotation object 80 carries out forward reverse rotation, according to the forward reverse rotation, the reciprocation object 82 will reciprocate linearly. When 1st wind outlet mark 124a of said rotation knob 85 counters with the directions mark S, as shown in drawing 17, the reciprocation object 82 is located in the location shown with a two-dot chain line. Moreover, when 5th wind outlet mark 124e of said rotation knob 85 counters with the directions mark S, as shown in drawing 17, the reciprocation object 82 is located in the location shown as a continuous line.

[0116] And as for inner cable 87b of a cable 87, let attitude die length be predetermined die

length according to the location of the longitudinal direction of the reciprocation object 82. Thus, the attitude die length of inner cable 87b according to the rotation location of the rotation knob 85 is mechanically transmitted to other equipments other than controller unit 71 which is not illustrated, and processing according to 1st wind outlet mark 124a – 5th wind outlet mark 124e is performed.

[0117] Next, the actuation relation of other members at the time of operating said slide knob 109 is explained. If slide migration of said slide knob 109 is carried out, the rocking member 107 will rotate an axial center O2 as a core. Under the present circumstances, if the slide knob 109 shows air circulation location 125a, projected part 108a of the piece 108 of moderation will engage with moderation crevice 110a of the guide wall 110, and, as for inner cable 112b of a cable 112, let attitude die length be predetermined die length according to the location of the rocking member 107 at this time.

[0118] Moreover, if the slide knob 109 shows open air inhalation location 125b, projected part 108a of the piece 108 of moderation will engage with moderation crevice 110b of the guide wall 110, and, as for inner cable 112b of a cable 112, let attitude die length be predetermined die length according to the location of the rocking member 107 at this time.

[0119] Thus, the attitude die length of inner cable 112b according to the slide position of the slide knob 109 is mechanically transmitted to other equipments other than controller unit 71 which is not illustrated, and processing according to said air circulation location 125a and open air inhalation location 125b is performed.

[0120] Next, the actuation relation of other members at the time of operating said slide knob 126 is explained. Slide movable [of the slide knob 126] is carried out in the vertical direction by lever section 114a guided to said guide hole 122.

[0121] And if the slide knob 126 is located in the OFF location 127a, 1st airflow location 127b – 3rd airflow location of 127d, the slide lever box 114 will be outputted to other equipments other than controller unit 71 which does not illustrate the electrical signal according to the location.

[0122] Next, the effectiveness of the controller unit 71 of this operation gestalt is explained.

(1) In the controller unit 71 of this operation gestalt, the slide knob 109 has been arranged for the axial center O2 in design side 72a of the design plate 72 possible [the slide to the shape of radii] as a core (it is a core about the rotation knobs 85 and 98).

[0123] Therefore, compared with the controller unit which has arranged the slide knob 109, without giving relation to the rotation knobs 85 and 98, the controller unit 11 can make small the arrangement tooth space of design side 12a, consequently can miniaturize the controller unit 11 compared with the above-mentioned controller unit. moreover, the axial center O2 of the rotation knobs 85 and 98 -- as a core -- the shape of radii -- a slide -- since the slide knob 109 has been arranged movable, appearance is beautiful.

[0124] (2) In the controller unit 71 of this operation gestalt, the rotation knob 85 and the rotation knob 98 were made into the axial center O2 which is the same axial center about the axial center of superposition and the rotation knob 85, and the axial center of the rotation knob 98. Therefore, compared with the controller unit which was separate and has arranged the rotation knob 85 and the rotation knob 98, the controller unit 11 can make small the arrangement tooth space of design side 12a, consequently can miniaturize the controller unit 11 compared with the above-mentioned controller unit.

[0125] (3) In the controller unit 71 of this operation gestalt, it was made to carry out the pressure welding of the moderation ball 103 and the moderation ball 104 by the spring 102 of a common piece to moderation side 81b and moderation side 91b, respectively. By the way, the controller unit 181 of the conventional technique had prepared one energization member (not shown) for energizing a moderation member to moderation surface part material to the moderation member (not shown) and moderation surface part material (not shown) of a pair. Therefore, the controller unit 71 can reduce components mark (spring 102) compared with the controller unit 181 of the conventional technique.

[0126] (4) When forward reverse rotation of the rotation knob 85 was carried out, forward reverse rotation also of the pinion section 80c is carried out similarly, and the reciprocation object 82 was made to reciprocate linearly by forward reverse rotation of the pinion section 80c

in the controller unit 71 of this operation gestalt. Moreover, when forward reverse rotation of the rotation knob 98 was carried out, forward reverse rotation also of the pinion section 90c is carried out similarly, and the reciprocation object 92 was made to reciprocate linearly by forward reverse rotation of the pinion section 90c. Therefore, the inner cables 87b and 97b connected with the reciprocation objects 82 and 92 also move linearly.

[0127] By the way, if forward reverse rotation of the rotation knobs 193a-195a is carried out, the controller unit 191 of the conventional technique will carry out both-way rocking so that the power conversion members 193c-195c may draw radii. Therefore, rotation of the rotation knobs 193a-195a could not get across to the power transfer cables 193e-195e connected with the power conversion members 193c-195c easily correctly.

[0128] Therefore, since the reciprocation objects 82 and 92 reciprocate linearly, the controller unit 71 can transmit rotation movement of the rotation knobs 85 and 98 to the inner cables 87b and 97b correctly compared with the controller unit 191 of the conventional technique.

(Other operation gestalten) In addition, each above-mentioned operation gestalt may be changed into other following operation gestalten, and may be materialized.

[0129] - In the aforementioned 1st operation gestalt, although the pieces 33-35 of moderation were adopted as the 1st moderation member, a moderation ball or a moderation pin energized in energization members, such as a spring, may be adopted.

[0130] - In the aforementioned 1st operation gestalt, although formed with the metal which has elasticity, as long as said pieces 33-35 of moderation have elasticity, they may be formed with synthetic resin etc.

[0131] - In the aforementioned 1st operation gestalt, although 16 moderation crevices 38a, 38b, 39a-39i, and 40a-40e were formed in the moderation side 37 of the moderation side formation section 36, the number of moderation crevices may be formed how many.

[0132] - the same centering on axial center O1 virtual circle E top in said 1st operation gestalt - - a slide -- three slide knobs 61-63 were formed movable. the same virtual centering not only on this but on axial center O1 circle E top -- a slide -- a movable slide knob -- two -- or four or more may be prepared.

[0133] - In the aforementioned 1st operation gestalt, the modification operating member which changes airflow for the rotation knob 60, the modification operating member which changes whether the open air is incorporated for the slide knob 61 in the car, the modification operating member which changes temperature for the slide knob 62, and the slide knob 63 were used as the modification operating member which changes the diffuser of a wind. You may combine so that it may be equivalent to any they are, respectively among the modification operating member which changes temperature not only for this but for the rotation knob 60 and the slide knobs 61-63, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member which changes whether the open air is incorporated in the car.

[0134] - In the aforementioned 2nd operation gestalt, although the moderation ball 103,104 was adopted as the 2nd and 3rd moderation member, a moderation pin may be adopted not only as this but as the 2nd and 3rd moderation member.

[0135] - In the aforementioned 2nd operation gestalt, although the spring 102 was adopted as an energization member, not only this but rubber, elastic material, etc. may be adopted. If the pressure welding of the moderation ball 103,104 is carried out to the moderation sides 81b and 91b in short, it is good anything.

[0136] - In the aforementioned 2nd operation gestalt, the modification operating member which changes the diffuser of a wind for the rotation knob 85, the modification operating member which changes temperature for the rotation knob 98, the modification operating member which changes whether the open air is incorporated for the slide knob 109 in the car, and the slide knob 126 were used as the modification operating member which changes airflow. You may combine so that it may be equivalent to any they are, respectively among the modification operating member which changes temperature not only for this but for the rotation knobs 85 and 98 and the slide knob 109,126, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member

which changes whether the open air is incorporated in the car.

[0137]

[Effect of the Invention] according to invention according to claim 1 to 6 -- a slide -- an operational modification operating member and rotation -- compared with the case where it was separate and an operational modification operating member is prepared, the arrangement tooth space of a modification operating member can be made small, consequently the actuation switch unit for cars can be miniaturized.

[0138] according to invention according to claim 2 -- rotation -- a core [axial center / of an operational modification operating member / rotation] -- carrying out -- two or more slides -- since an operational modification operating member is prepared, the arrangement tooth space of a modification operating member can be lessened further, consequently the actuation switch unit for cars can be miniaturized further.

[0139] It is not necessary to prepare independently the 1st moderation surface part material for every 1st moderation member, respectively, and, according to invention according to claim 3, structure can be simplified. According to invention according to claim 4, the arrangement tooth space of a modification operating member can be lessened further, consequently the actuation switch unit for cars can be miniaturized further.

[0140] According to invention according to claim 5, the components mark of the actuation switch unit for cars are reducible. the case where it reciprocates in order that a rack may reciprocate linearly according to invention according to claim 6, for example, so that a rack may draw radii -- comparing -- rotation -- rotation movement of an operational modification operating member can be correctly transmitted to a power transfer cable.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] In the actuation switch unit for cars equipped with the modification operating member which changes temperature, the modification operating member which changes airflow, the modification operating member which changes the diffuser of a wind, and the modification operating member which changes whether the open air is incorporated in the car It prepares operational. the inside of each of said modification operating member -- at least one modification operating member -- rotation -- the inside of the remaining modification operating members -- at least one modification operating member -- a slide -- operational -- preparing -- said slide -- an operational modification operating member said rotation -- the rotation axial center of an operational modification operating member -- as a core -- the shape of radii -- a slide -- the actuation switch unit for cars characterized by having arranged operational.

[Claim 2] said slide -- an operational modification operating member -- those with two or more, and said each slide -- an operational modification operating member -- rotation -- the same virtual centering on rotation axial center of operational modification operating member circle top -- a slide -- the actuation switch unit for cars according to claim 1 characterized by having arranged operational.

[Claim 3] As opposed to two or more modification operating members arranged operational said same virtual circle top -- a slide -- the 1st detent which gives a feeling of moderation -- having -- said 1st detent -- said same virtual circle top -- a slide -- with the 1st moderation member prepared in two or more modification operating members arranged operational, respectively the 1st moderation surface part material to which the pressure welding of said 1st moderation member is carried out relatively -- having -- said 1st moderation surface part material -- rotation -- the actuation switch unit for cars according to claim 2 characterized by having arranged on the virtual circle centering on the rotation axial center of an operational modification operating member.

[Claim 4] said rotation -- an operational modification operating member -- those with two or more, among those at least two rotation -- the inside of claim 1 characterized by the rotation axial center of an operational modification operating member being the same thru/or claim 3 -- the actuation switch unit for cars given in any 1 term.

[Claim 5] The rotatable modification operating member of said plurality including the 1st modification operating member and the 2nd modification operating member whenever [second-article / which gives a feeling of moderation to said 1st modification operating member] A device, It has the 3rd detent which gives a feeling of moderation to said 2nd modification operating member. Whenever [said second-article] a device It has a member whenever [second-article / which carries out / whenever / said second-article / a pressure welding to surface part material relatively to surface part material whenever / second-article / which is rotated according to the amount of rotation of said 1st modification operating member]. Said 3rd detent The 3rd moderation surface part material which rotates according to the amount of rotation of said 2nd modification operating member, It has the 3rd moderation member which carries out a pressure welding relatively to said 3rd moderation surface part material. Whenever [said second-article] a member and said 3rd moderation member The actuation switch unit for

cars according to claim 4 characterized by carrying out the pressure welding in the common energization member to surface part material and said 3rd moderation surface part material, respectively whenever [said second-article].

[Claim 6] said rotation -- the inside of claim 1 characterized by having the pinion rotated according to the amount of rotation of an operational modification operating member, the rack which reciprocates by forward reverse rotation of said pinion, and the power transfer cable with which reciprocation of said rack is transmitted, and said rack reciprocating linearly thru/or claim 5 -- the actuation switch unit for cars given in any 1 term.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The front view of the controller unit in the 1st operation gestalt.

[Drawing 2] The decomposition perspective view of the controller unit in the 1st operation gestalt.

[Drawing 3] The A-A line view fragmentary sectional view in drawing 1.

[Drawing 4] (a) is the approximate account Fig. showing the actuation relation between a rotation lever and a cable. (b) is the explanatory view showing the moderation crevice of a moderation side.

[Drawing 5] The B-B line view fragmentary sectional view in drawing 3.

[Drawing 6] The front view of the substrate in the 1st operation gestalt.

[Drawing 7] The front view of the controller unit in the 2nd operation gestalt.

[Drawing 8] The decomposition perspective view of the controller unit in the 2nd operation gestalt.

[Drawing 9] The decomposition perspective view of the controller unit in the 2nd operation gestalt.

[Drawing 10] The decomposition perspective view of the controller unit in the 2nd operation gestalt.

[Drawing 11] The front view of the case body in the 2nd operation gestalt.

[Drawing 12] Rear view of the case body in the 2nd operation gestalt.

[Drawing 13] The fragmentary sectional view showing the relation of the rotation knob 98 and rotation member in the 2nd operation gestalt.

[Drawing 14] The sectional view showing the relation between the rotation knob 85 and connection member in the 2nd operation gestalt, and a rotation object.

[Drawing 15] (a) is the rear view of the rotation knob 85 and the connection section in the C-C line view of drawing 14. (b) is D-D line view sectional view in drawing 14.

[Drawing 16] (a) is the perspective view showing the transverse plane of the reciprocation object 82. (b) is the perspective view showing the tooth back of the reciprocation object 82.

[Drawing 17] The approximate account Fig. showing the relation of the reciprocation object and the pinion section in the 2nd operation gestalt.

[Drawing 18] (a) is the perspective view showing a rotation object. (b) is the perspective view showing a rotation member.

[Drawing 19] The approximate account Fig. showing the relation of the moderation ball and moderation side in the 2nd operation gestalt.

[Drawing 20] The approximate account Fig. showing the actuation relation of the rocking member and cable in the 2nd operation gestalt.

[Drawing 21] (a) is the partial perspective view showing the relation between a rocking member and the piece of moderation. (b) is the partial enlarged drawing showing the relation between a projected part and a moderation crevice.

[Drawing 22] The front view showing the controller unit 181 in the conventional technique.

[Drawing 23] The front view showing the controller unit 191 in the conventional technique.

[Drawing 24] The outline perspective view showing the rotation knob device in the conventional

technique.

[Description of Notations]

11 71 -- The controller unit as an actuation switch unit for cars, 33-35 -- Piece of moderation as the 1st moderation member,

36 -- The moderation side formation section as 1st moderation surface part material, the modification operating member and rotation which change 60 -- airflow -- the rotation knob as an operational modification operating member,

the modification operating member which changes whether 61 -- open air is incorporated in the car, and a slide -- the slide knob as an operational modification operating member,

the modification operating member which changes 62 -- temperature, and a slide -- the slide knob as an operational modification operating member,

the modification operating member which changes the diffuser of the 63 -- style, and a slide -- the slide knob as an operational modification operating member,

80 -- It is a rotation object as surface part material whenever [second-article],

80c, 90c -- The pinion section as a pinion,

82a, 92a -- The rack section as a rack,

the modification operating member which changes the diffuser of the 85 -- style, and rotation -- the rotation knob as an operational modification operating member and the 1st moderation operating member,

87b, 97b -- Inner cable as a power transfer cable,

90 -- Rotation member as 3rd moderation surface part material,

the modification operating member which changes 98 -- temperature, and rotation -- the rotation knob as an operational modification operating member and the 2nd moderation operating member,

102 -- Spring as an energization member,

103 -- It is a moderation ball as a member whenever [second-article],

104 -- Moderation ball as the 3rd moderation member,

109 -- Slide knob as a modification operating member which changes whether the open air is incorporated in the car,

126 -- Slide knob as a modification operating member which changes airflow,

O1, O2 -- The axial center as a rotation axial center, E -- Virtual circle.

[Translation done.]

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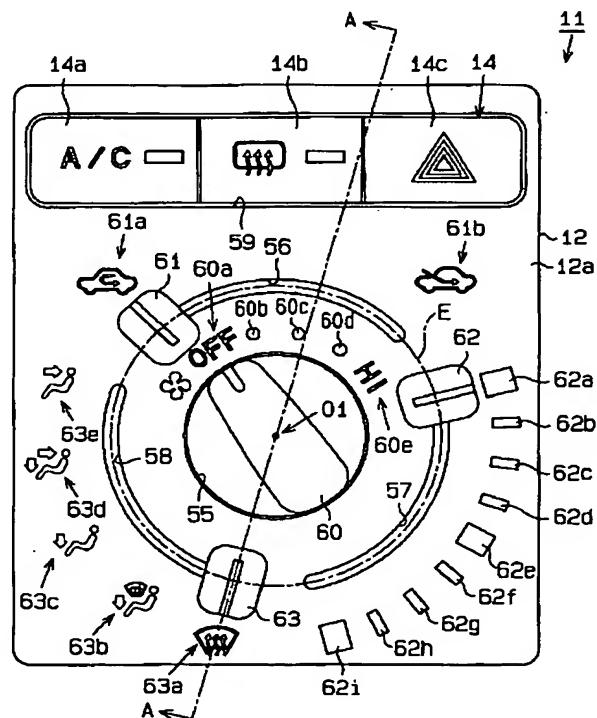
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(54) 【発明の名称】 車両用操作スイッチユニット

(57) 【要約】

【課題】 変更操作部材の配置スペースを小さくでき、ユニット全体を小型化できる車両用操作スイッチユニットを提供する。

【解決手段】 コントローラユニットコントローラユニット11の意匠板12において、軸心O1を中心として回動ノブ60を回動可能に設ける。軸心O1を中心として同一仮想円上に3つのガイド孔56～58を設け、そのガイド孔56～58にスライド操作可能にスライドノブ61～63を設ける。



【特許請求の範囲】

【請求項1】 温度を変更する変更操作部材と、風量を変更する変更操作部材と、風の吹き出し口を変更する変更操作部材と、外気を車内に取り込むか否かを変更する変更操作部材とを備えた車両用操作スイッチユニットにおいて、

前記各変更操作部材のうち少なくとも一つの変更操作部材を回動操作可能に設け、

残りの変更操作部材のうち少なくとも一つの変更操作部材をスライド操作可能に設け、

前記スライド操作可能な変更操作部材は、前記回動操作可能な変更操作部材の回動軸心を中心として円弧状にスライド操作可能に配置したことを特徴とする車両用操作スイッチユニット。

【請求項2】 前記スライド操作可能な変更操作部材は複数あり、

前記各スライド操作可能な変更操作部材を、回動操作可能な変更操作部材の回動軸心を中心とした同一仮想円上にスライド操作可能に配置したことを特徴とする請求項1に記載の車両用操作スイッチユニット。

【請求項3】 前記同一仮想円上にスライド操作可能に配置した複数の変更操作部材に対して、節度感を与える第1節度機構を備え、

前記第1節度機構は前記同一仮想円上にスライド操作可能に配置した複数の変更操作部材にそれぞれ設けられた第1節度部材と、前記第1節度部材が相対的に圧接される第1節度面部材を備え、
前記第1節度面部材を、回動操作可能な変更操作部材の回動軸心を中心とした仮想円上に配置したことを特徴とする請求項2に記載の車両用操作スイッチユニット。

【請求項4】 前記回動操作可能な変更操作部材は複数あり、

そのうち少なくとも2つの回動操作可能な変更操作部材の回動軸心は同一であることを特徴とする請求項1乃至請求項3のうちいずれか1項に記載の車両用操作スイッチユニット。

【請求項5】 前記複数の回動可能な変更操作部材は、第1変更操作部材と、第2変更操作部材を含み、

前記第1変更操作部材に対して節度感を与える第2節度機構と、前記第2変更操作部材に対して節度感を与える第3節度機構とを備え、

前記第2節度機構は、前記第1変更操作部材の回動量に応じて回動する第2節度面部材と、前記第2節度面部材に対して相対的に圧接する第2節度部材とを備え、
前記第3節度機構は、前記第2変更操作部材の回動量に

応じて回動する第3節度面部材と、前記第3節度面部材に対して相対的に圧接する第3節度部材とを備え、

前記第2節度部材と前記第3節度部材は、共通の付勢部材にて、前記第2節度面部材及び前記第3節度面部材に対してそれぞれ圧接されていることを特徴とする請求項

4に記載の車両用操作スイッチユニット。

【請求項6】 前記回動操作可能な変更操作部材の回動量に応じて回動するピニオンと、前記ピニオンの正逆回動により往復動するラックと、前記ラックの往復動が伝達される動力伝達ケーブルとを備え、
前記ラックは直線的に往復動することを特徴とする請求項1乃至請求項5のうちいずれか1項に記載の車両用操作スイッチユニット。

【発明の詳細な説明】

10 【0001】

【発明の属する技術分野】 本発明は、例えば車両に使われる車両用操作スイッチユニットに関するものである。

【0002】

【従来の技術】 従来より、車両、特に自動車には、車内の空気調節を行う車両用操作スイッチユニット（以下、コントローラユニットという。）が備えられている。

【0003】 このようなコントローラユニットとして、図22に示すものがある。このコントローラユニット181は、4つのスライドノブ機構182, 183, 184, 185が設けられている。前記各スライドノブ機構

182～185は、コントローラユニット181における車内へ向け露出する面である意匠面186に設けられた横長のガイド孔182a, 183a, 184a, 185aと、そのガイド孔182a～185a内をスライド移動可能なスライドつまみ182b, 183b, 184b, 185bとを備えている。

【0004】 前記スライドつまみ182b～185bは動力伝達ケーブル182c, 183c, 184c, 185cを介して図示しない他の機構に連結されている。前記各スライドノブ機構182～185は、スライドつまみ182b～185bをスライドさせることにより、他の機構を作動させ風の吹き出し口の変更、温度の変更、外気を車内に取り込むか否かの変更、風量の変更を行うようにされている。

【0005】 そして、スライドノブ機構182～185はそれぞれ別々で図示しない節度機構を備えている。具体的には、節度機構は、図示しない節度面部材と、図示しない節度部材とを備えており、前記節度部材は図示しない付勢部材にて前記節度面部材に対して圧接されている。

【0006】 また、コントローラユニット181以外のコントローラユニットとして図23に示すものがある。このコントローラユニット191は、スライドノブ機構192と回動ノブ機構193, 194, 195が設けられている。

【0007】 前記スライドノブ機構192は、コントローラユニット191における車内へ向け露出する面である意匠面196に設けられた横長のガイド孔192aと、そのガイド孔192a内をスライド移動可能なスライドつまみ192bとを備えている。前記スライドつま

み192bは図示しない動力伝達ケーブルを介して図示しない他の機構に連結されており、スライドノブ機構192は、スライドつまみ192bをスライドさせることにより、他の機構を作動させ外気を車内に取り込むか否かの変更を行うようにされている。

【0008】そして、前記回動ノブ機構193～195は、回動可能に設けられた回動ノブ193a, 194a, 195aを備えており、前記回動ノブ193a～195aは意匠面196に配置されている。前記回動ノブ機構193～195は、回転ノブ193a～195aを回動させることにより、温度の変更、風量の変更、風の吹き出し口の変更を行うようにされている。

【0009】また、前記回動ノブ機構193～195は、図24に示すように、回動ノブ193a～195aの回動量に応じて回動するピニオン部材193b, 194b, 195bと、前記ピニオン部材193b～195bの正逆回動を往復動に変換する動力変換部材193c, 194c, 195cも備えている。

【0010】なお、本実施形態では、正回転は、時計方向、逆回転は反時計方向をいう。前記動力変換部材193c～195cは図示しない支持部材に往復搖動可能に支持され、かつ前記ピニオン部材193b～195bと噛合する扇形歯車部193d, 194d, 195dを備えている。前記円弧状の扇形歯車部193d～195dは、前記動力変換部材193c～195cの回動支持点を中心とした円弧状に形成され、動力変換部材193c～195cは円弧を描くよう往復搖動する。

【0011】この結果、回動ノブ193a～195aの回動運動は、動力変換部材193c～195cを介して、動力変換部材193c～195cに連結された動力伝達ケーブル193e, 194e, 195eへ往復動として伝達される。

【0012】

【発明が解決しようとする課題】ところが、前記コントローラユニット181は、意匠面186にスライドノブ機構182～185がそれぞれ個別に配置されていた。そのため、スライドつまみ182b～185bを配置するために意匠面186を大きくする必要があった。一方、コントローラユニット191においても、スライドノブ機構192及び回動ノブ機構193～195は意匠面196においてそれぞれ個別に配置されていた。そのため、スライドつまみ192b及び回動ノブ193a～195aを配置するために意匠面186を大きくする必要があった。

【0013】従って、本発明は、前述した事情に鑑みてなされたものであって、その目的は変更操作部材の配置スペースを小さくでき、この結果ユニット全体を小型化できる車両用操作スイッチユニットを提供することにある。

【0014】

【課題を解決するための手段】上記目的を達成するためには、請求項1に記載の発明は、温度を変更する変更操作部材と、風量を変更する変更操作部材と、風の吹き出し口を変更する変更操作部材と、外気を車内に取り込むか否かを変更する変更操作部材とを備えた車両用操作スイッチユニットにおいて、前記各変更操作部材のうち少なくとも一つの変更操作部材を回動操作可能に設け、残りの変更操作部材のうち少なくとも一つの変更操作部材をスライド操作可能に設け、前記スライド操作可能な変更操作部材は、前記回動操作可能な変更操作部材の回動軸心を中心として円弧状にスライド操作可能に配置したこととする。

【0015】請求項2に記載の発明は、請求項1に記載の車両用操作スイッチユニットにおいて、前記スライド操作可能な変更操作部材は複数あり、前記各スライド操作可能な変更操作部材を、回動操作可能な変更操作部材の回動軸心を中心とした同一仮想円上にスライド操作可能に配置したことを要旨とする。

【0016】請求項3に記載の発明は、請求項2に記載の車両用操作スイッチユニットにおいて、前記同一仮想円上にスライド操作可能に配置した複数の変更操作部材に対して、節度感を与える第1節度機構を備え、前記第1節度機構は前記同一仮想円上にスライド操作可能に配置した複数の変更操作部材にそれぞれ設けられた第1節度部材と、前記第1節度部材が相対的に圧接される第1節度面部材を備え、前記第1節度面部材を、回動操作可能な変更操作部材の回動軸心を中心とした仮想円上に配置したことを要旨とする。

【0017】請求項4に記載の発明は、請求項1乃至請求項3のうちいずれか1項に記載の車両用操作スイッチユニットにおいて、前記回動操作可能な変更操作部材は複数あり、そのうち少なくとも2つの回動操作可能な変更操作部材の回動軸心は同一であることを要旨とする。

【0018】請求項5に記載の発明は、請求項4に記載の車両用操作スイッチユニットにおいて、前記複数の回動可能な変更操作部材は、第1変更操作部材と、第2変更操作部材を含み、前記第1変更操作部材に対して節度感を与える第2節度機構と、前記第2変更操作部材に対して節度感を与える第3節度機構とを備え、前記第2節度機構は、前記第1変更操作部材の回動量に応じて回動する第2節度面部材と、前記第2節度面部材に対して相対的に圧接する第2節度部材とを備え、前記第3節度機構は、前記第2変更操作部材の回動量に応じて回動する第3節度面部材と、前記第3節度面部材に対して相対的に圧接する第3節度部材とを備え、前記第2節度部材と前記第3節度部材は、共通の付勢部材にて、前記第2節度面部材及び前記第3節度面部材に対してそれぞれ圧接されていることを要旨とする。

【0019】請求項6に記載の発明は、請求項1乃至請求項5のうちいずれか1項に記載の車両用操作スイッチ

ユニットにおいて、前記回動操作可能な変更操作部材の回動量に応じて回動するピニオンと、前記ピニオンの正逆回動により往復動するラックと、前記ラックの往復動が伝達される動力伝達ケーブルとを備え、前記ラックは直線的に往復動することを要旨とする。

(作用) 従って、請求項1に記載の発明においては、スライド操作可能な変更操作部材は回動操作可能な変更操作部材の回動軸心を中心として円弧状にスライド操作可能とされる。

【0020】請求項2に記載の発明においては、請求項1に記載の作用に加えて、複数の各スライド操作可能な変更操作部材は、回動操作可能な変更操作部材の回動軸心を中心とした同一仮想円上にスライド操作可能とされる。

【0021】請求項3に記載の発明においては、請求項2に記載の作用に加えて、回動操作可能な変更操作部材の回動軸心を中心とした仮想円上に配置された第1節度面部材に対して複数の第1節度部材が圧接される。この結果、同一仮想円上にスライド操作可能に配置した複数の変更操作部材には節度感が与られる。

【0022】請求項4に記載の発明においては、請求項1乃至請求項3のうちいずれか1項に記載の作用に加えて、複数の回動操作可能な変更操作部材を、回動軸心が同一になるように設けた。即ち、複数の回動操作可能な変更操作部材を重ねるかたちで設けられる。

【0023】請求項5に記載の発明においては、請求項4に記載の作用に加えて第1変更操作部材を回動させると付勢部材にて第2節度部材と第2節度面部材とが圧接されているため、第1変更操作部材には節度感が得られる。また、第2変更操作部材を回動させると付勢部材にて第3節度部材と第3節度面部材とが圧接されているため、第2変更操作部材には節度感が得られる。そして、前記第2節度部材と前記第2節度面部材とを圧接させる付勢部材と、前記第3節度部材と前記第3節度面部材とを圧接させる付勢部材は共通なため、それぞれ独立で付勢部材を設けた場合と比べて、車両用操作スイッチユニットの部品点数が削減される。

【0024】請求項6に記載の発明においては、請求項1乃至請求項5のうちいずれか1項に記載の作用に加えて、回動操作可能な変更操作部材を回動させると、ピニオンは同様に回動される。前記ピニオンが正逆回動すると、ラックは直線的に往復動する。前記ラックの直線的な往復動は動力伝達ケーブルに伝達される。

【0025】

【発明の実施の形態】(第1実施形態)以下、本発明を具体化した第1実施形態を図1~図6に従って説明する。

【0026】なお、本実施形態の図1、及び後述する第2実施形態の図7における右側を右側、左側を左側、上側を上側、下側を下側、紙面に直交する手前側を前側、

紙面に直交する奥側を後側とする。

【0027】図1は、本実施形態の車両用操作スイッチユニット(以下、コントローラユニットという。)11の前面を示しており、図2に示すように、前記コントローラユニット11は、意匠板12とケース本体13と、スイッチボックス14とを備えている。

【0028】前記ケース本体13は、前側面が開口した略四角箱状をなし、車両の図示しないインストルメントパネル内部の図示しない固定部材に対して固定されている。前記ケース本体13の後側側壁は略正方形状に形成されている。

【0029】図2、3に示すように、前記ケース本体13の後側側壁において、略中央は前方へ向け押し出され有蓋円筒状の収納部13aが形成され、同収納部13aの中央部には、円形状の貫通孔13bが形成されている。

【0030】前記ケース本体13の後側には、基板15が固定され、基板15の略中央部には貫通孔15aが形成されている。図6に示すように、前記基板15の前側面には、貫通孔15aを中心として、4つの放射線状に配置された固定電極16a、16b、16c、16dが略等間隔に固定されている。前記固定電極16a~16dは導電性の金属から形成されている。

【0031】前記固定電極16aは、貫通孔15aに対して上方よりやや左側に配置され、固定電極16aから時計方向回りに固定電極16b、16c、16dの順に各固定電極が配置されている。前記固定電極16dは貫通孔15aに対して略右上に配置されている。図3に示すように、前記固定電極16a~16dの一端は、基板15を貫通して、基板15の後側へ延設されている。なお、図3では固定電極16dの状態のみ示している。

【0032】また、前記基板15の前側面には、円環状の共通電極16eが貫通孔15aの外周に形成され、図3に示すように、共通電極16eの上端外周部は基板15を貫通して、基板15の後側へ延設されている。

【0033】図2、3に示すように、前記収納部13aと基板15との間には回動体17が配置されている。前記回動体17は円盤部17aと、前記円盤部17aの前後両面の中心に設けられ、互いに同軸の軸部17b、17cと、前記円盤部17aの外周面に形成した収納孔17dとを備えている。

【0034】前記回動体17の軸部17cは前記基板15の貫通孔15aに回動可能に支持され、回動体17の軸部17bはケース本体13の貫通孔13bに挿通されている。そして、回動体17の円盤部17aは前記ケース本体13の収納部13a内に収納されている。

【0035】図3に示すように、前記回動体17の円盤部17aの後側側面には、スプリング18にて基板15へ向け付勢された導電性の金属からなる摺動電極19が配置され、摺動電極19は基板15の前側側面の共通電

極16eに常に圧接されている。そして、前記回動体17がその軸心O1を中心回動した際に、前記摺動電極19が固定電極16a～16dに対して選択的に摺動接触するようにされている(図6参照)。なお、軸心O1は回動軸心に相当する。

【0036】前記回動体17の収納孔17dには節度ボール20が出没可能に収納されるとともに、同節度ボール20を外方へ向け付勢するスプリング21が収納されている。前記節度ボール20はケース本体13の収納部13aの内周面に対して常に圧接するようにされている。図3、5に示すように、前記収納部13aの内周面は、節度面22とされており、同節度面22は5つの節度凹部22a、22b、22c、22d、22eが形成されている。そして、前記節度凹部22b～22eに節度ボール20が係合すると、前記摺動電極19は固定電極16a～16dに選択的に圧接するようにされている(図6参照)。

【0037】図2、3に示すように、回動体17の軸部17bの外周には、3つの回動レバー30、31、32が設けられ、同回動レバー30～32は前記軸部17bの外周に設けられた係止爪17eにて前後方向への移動が規制されている。前記回動レバー30～32の基端部には、円形状の貫通孔30a、31a、32aが形成され、同貫通孔30a～32aは前記回動体17の軸部17bに回動可能に外嵌されている。前記回動レバー30～32の先端部は前方へ向け屈曲されたノブ取付部30b、31b、32bが形成されている。

【0038】図1、4(a)に示すように、前記回動レバー30～32は、それぞれ後述するガイド孔56～58に回動を規制されることで、前記回動体17の軸部17bを基準として、略左上から略右上、略右上から略下方、略下方から略左上のそれぞれの範囲で回動可能とされている。

【0039】また、図2、3に示すように、回動レバー30～32の中間部(基端と先端との中間)には、略コ字形状をなす貫通孔が透設されるように矩形状の節度片固定部30c、31c、32cが後方へ向けて切起して屈曲形成されている。

【0040】図3、4(a)に示すように、前記節度片固定部30c～32cには、有弾性の金属からなる第1節度部材としての節度片33、34、35の一端部が固定されている。前記節度片33～35の先端部近傍には回動体17の軸心O1を中心として放射方向へ向け押し出された半球状の突部33a、34a、35aが形成されている。同突部33a～35aは、片持ち梁状態の節度片33～35の付勢にて、後述する節度面37に対して常に圧接されている。

【0041】さらに、前記回動レバー30～32にはケーブル取付部30d、31d、32dが設けられている。ところで、前記ケース本体13の後側側壁において

て、前記収納部13aの外周には軸心O1を軸心とした円筒状の節度面形成部36が前方へ向け突出形成されている。なお、節度面形成部36が第1節度面部材に相当する。前記節度片33～35及び節度面形成部36にて第1節度機構が構成されている。

【0042】図4(a)、4(b)に示すように、前記節度面形成部36の内周面は、節度面37とされており、同節度面37には、16個の節度凹部38a、38b、39a～39i、40a～40eが形成されている。前記節度凹部38bは前記回動体17の軸部17bを基準として右上に配置され、同節度凹部38bから時計回りに節度凹部39a～39i、40a～40e、38aの順に各節度凹部が配置されている。前記節度凹部38aは前記軸部17bを基準として左上に配置されている。

【0043】前記節度凹部38a、38bは節度片33の突部33aが係合するようにされており、節度凹部39a～39iは節度片34の突部34aが係合するようにされている。また、前記節度凹部40a～40eは節度片35の突部35aが係合するようにされている。

【0044】さらに、前記ケース本体13の後側側壁には、3つのケーブル保持部45、46、47が前方へ向けて突出形成されている。前記ケーブル保持部45～47は、ケース本体13の後側側壁の左上、右上、右下のそれぞれの端部近傍に配置されており、一対の挟着片を備えている。前記ケーブル保持部45～47には、各一対の挟着片にてケーブル48、49、50のアウターケーブル48a、49a、50aが挟着固定されている。

【0045】前記ケーブル48～50は、アウターケーブル48a～50aと、アウターケーブル48a～50a内に挿通されたインナーケーブル48b、49b、50bを備えている。前記インナーケーブル48b～50bの先端部は、回動レバー30～32のケーブル取付部30d～32dに回動可能に連結されている。そして、前記回動レバー30～32の回動量に応じてインナーケーブル48b～50bは、アウターケーブル48a～50a内を摺動するようにされている。

【0046】図1、2に示すように、前記ケース本体13の前方には前記意匠板12が固定されており、同意匠板12は、ケース本体13の外形形状より上部が長く形成されている。前記意匠板12には、回動ノブ取付孔55、ガイド孔56、57、58、スイッチ取付孔59が設けられている。

【0047】前記スイッチ取付孔59は、意匠板12上部のケース本体13と対向していない部分において、左右方向に延びるように形成されている。前記スイッチ取付孔59の後側には、ケース本体13の上方に固定されたスイッチボックス14が配置されている。前記スイッチボックス14の前側部には、3つの押圧スイッチ14a、14b、14cが設けられており、同押圧スイッチ

14a～14cはスイッチ取付孔59の後方から前方へ向け挿通されている。

【0048】前記意匠板12の意匠面12aにおいて、前記回動ノブ取付孔55、ガイド孔56～58は前記ケース本体13と対向した部分、即ち、略正方形状のスペースに配置されている。前記回動ノブ取付孔55は円形状の孔であり、孔の中心が前記回動体17の軸心O1と一致するようにされている。

【0049】ところで、図2、3に示すように、前記回動体17の軸部17bにおいて、前記係止爪17eより前方の部分は、係止爪17eより後方の部分と比べて径が小さく、かつ四角柱状に形成されている。以下、この四角柱状の部分を回動ノブ取付部17fという。前記回動ノブ取付部17fには回動ノブ60が固定され、同回動ノブ60は意匠面12aに対して突出するように配置されている。前記回動ノブ60は風量を変更する変更操作部材、及び回動操作可能な変更操作部材に相当する。

【0050】図1に示すように、前記回動ノブ60は意匠板12の意匠面12aに設けられたOFF位置60a、第1風量位置60b～第4風量位置60eを選択的に示すように回動操作可能にされている。

【0051】前記ガイド孔56～58は前記軸心O1を中心とした同一仮想円E上に位置するように形成されている。前記同一仮想円E上において、前記ガイド孔56～58は軸心O1を基準として略左上から略右上、略左上から略下方、略下方から略左上にかけてそれぞれ形成されている。前記ガイド孔56～58には、前記回動レバー30～32のノブ取付部30b～32bの先端部が後方から前方へ向け挿通されており(図3においては、ノブ取付部32bのみ図示)、その先端部にはスライドノブ61～63が固定されている。

【0052】前記スライドノブ61～63は、外気を車内に取り込むか否かを変更する変更操作部材、温度を変更する変更操作部材、風の吹き出し口を変更する変更操作部材にそれぞれ相当し、かつスライドノブ61～63は3者ともにスライド操作可能な変更操作部材に相当する。

【0053】前記スライドノブ61は、意匠板12の意匠面12aに設けられた空気循環位置61a、外気吸入位置61bを選択的に示すようにスライド操作可能にされている。また、前記スライドノブ62は、前記意匠面12aに設けられた第1温度位置62a～第9温度位置62iを選択的に示すようにスライド操作可能にされている。さらに、前記スライドノブ63は、前記意匠面12aに設けられた第1風吹き出し位置63a～第5風吹き出し位置63eを選択的に示すようにスライド操作可能にされている。

【0054】次に、前記回動ノブ60を操作した際に他の部材の作動関係を説明する。図1、2、5、6に示すように、前記回動ノブ60を回動させると、回動

体17はその回動ノブ60の回動に伴って回動する。この際、回動ノブ60がOFF位置60aを示すと、節度ボール20は節度凹部22aと係合し、摺動電極19は図6の二点鎖線で示す摺動電極19の位置に位置する。

【0055】また、前記回動ノブ60が第1～第4風量位置60b～60eを示すと、節度ボール20は節度凹部22b～22eと係合し、摺動電極19は固定電極16a～16dに選択的に接触する。そして、前記摺動電極19は共通電極16eに対して常に当接されているため、摺動電極19を介して共通電極16eと固定電極16a～16dとが電気的に接続される。このため、図示しないコントローラユニット11以外の他の装置にその電気信号が outputされ、前記第1～第4風量位置60b～60eに応じた処理が行われる。

【0056】次に、前記スライドノブ61を操作した際に他の部材の作動関係を説明する。図1、4

(a)、4(b)に示すように、前記スライドノブ61をスライド移動させると、回動レバー30は軸心O1を中心として回動する。この際、スライドノブ61が空気循環位置61aを示すと、節度片33の突部33aは節度面37の節度凹部38aと係合し、ケーブル48のインナーケーブル48bは、このときの回動レバー30の位置に応じて進退長さが所定長さとされる。また、スライドノブ61が外気吸入位置61bを示すと、節度片33の突部33aは節度面37の節度凹部38bと係合し、ケーブル48のインナーケーブル48bはこのときの回動レバー30の位置に応じて進退長さが所定長さとされる。

【0057】このように、スライドノブ61のスライド位置に応じたインナーケーブル48bの進退長さは、図示しないコントローラユニット11以外の他の装置に対して機械的に伝達され、前記空気循環位置61a、外気吸入位置61bに応じた処理が行われる。

【0058】次に、前記スライドノブ62を操作した際に他の部材の作動関係を説明する。図1、4

(a)、4(b)に示すように、前記スライドノブ62をスライド移動させると、回動レバー31は軸心O1を中心として回動する。この際、スライドノブ62が第1～第9温度位置62a～62iを示すと、節度片34の突部34aは節度面37の節度凹部39a～39iと係合し、ケーブル49のインナーケーブル49bは、このときの回動レバー31の位置に応じて進退長さが所定長さとされる。

【0059】このように、スライドノブ62のスライド位置に応じたインナーケーブル49bの進退長さは、図示しないコントローラユニット11以外の他の装置に対して機械的に伝達され、前記第1～第9温度位置62a～62iに応じた処理が行われる。

【0060】次に、前記スライドノブ63を操作した際に他の部材の作動関係を説明する。図1、4

(a), 4 (b) に示すように、前記スライドノブ63をスライド移動させると、回動レバー32は軸心O1を中心として回動する。この際、スライドノブ63が第1～第5風吹き出し位置63a～63eを示すと、節度片35の突部35aは節度面37の節度凹部40a～40eと係合し、ケーブル50のインナーケーブル50bは、このときの回動レバー32の位置に応じて進退長さが所定長さとされる。

【0061】このように、スライドノブ63のスライド位置に応じたインナーケーブル50bの進退長さは、図示しないコントローラユニット11以外の他の装置に対して機械的に伝達され、前記第1～第5風吹き出し位置63a～63eに応じた処理が行われる。

【0062】次に、本実施形態のコントローラユニット11の効果について説明する。

(1) 本実施形態のコントローラユニット11では、意匠板12の意匠面12aにおいて、回動ノブ60を中心(軸心O1を中心)として同一仮想円E上にスライドノブ61～63をスライド移動可能に配置した。従って、例えば3つのスライドノブと回動ノブとを別々で意匠面に配置したコントローラユニットと比べ、コントローラユニット11は意匠面12aの配置スペースを小さくでき、この結果、コントローラユニット11を前述のコントローラユニットと比べ小型化できる。

【0063】また、スライドノブ61～63は回動ノブ60を中心として同一仮想円上にスライド可能に配置したため、見た目が美しい。加えて、本実施形態の回動ノブ60とスライドノブ61～63の配置パターンは、その4つのノブを配置する意匠面12a部分が略正方形状の場合には、非常に効率よく配置できる。

【0064】(2) 本実施形態のコントローラユニット11では、一つの節度面37に対して3つの節度片33～35を圧接させるように構成し、この結果、3つのスライドノブ61～63に節度感を与えるようにした。ところで、従来技術のコントローラユニット181では、スライドノブ機構182～185はそれぞれ一対の節度部材(図示しない)と節度面部材(図示しない)を備えていた。従って、コントローラユニット11は、従来技術のコントローラユニット181のように各節度部材毎にそれぞれ独立して節度面部材を設ける必要がなく構造を単純化できる。

【0065】(3) 本実施形態のコントローラユニット11では、回動ノブ60及びスライドノブ61～63を軸心O1を中心として回動又はスライド可能に配置した。そのため、各回動ノブ60及びスライドノブ61～63を操作しても、そのノブ60～63とO1との距離は変化しない(図1参照)。

【0066】従って、片手で回動ノブ60及びスライドノブ61～63のうち3つのノブを、同時に軸心O1を中心として同方向に回動又はスライド操作することがで

きる。なお、ここでいう同方向とは軸心O1を中心として時計回り、又は反時計回りの方向のこという。

【0067】例えば、前記回動ノブ60、スライドノブ61、スライドノブ62を同時に同方向に操作できる。また、スライドノブ61、スライドノブ62、スライドノブ63を同時に同方向に操作できる。

【0068】(第2実施形態)以下、本発明を具体化した第2実施形態を図7～図21に従って説明する。図7は、本実施形態の車両用操作スイッチユニット(以下、コントローラユニットという。)71の前面を示しており、図8、9に示すように、前記コントローラユニット71は、意匠板72とケース本体73と、スイッチボックス74とを備えている。

【0069】前記ケース本体73は、前側面が開口した略四角箱状をなし、車両の図示しないインストルメントパネル内部の図示しない固定部材に対して固定されている。図9、11に示すように、前記ケース本体73の後側側壁73aの中央近傍には、円形状をなす貫通孔73bが形成されている。前記ケース本体73の後側側壁73aにおいて、前記貫通孔73bの外周には、前方へ向けて断面C形形状のピニオン収納部73cが突出形成されている。前記ピニオン収納部73cの周壁は、貫通孔73bの軸心O2を中心とした円弧状に形成され、周壁の上部は開口されている。なお、前記軸心O2は回動軸心に相当する。

【0070】前記ケース本体73の後側側壁73aにおいて、前記ピニオン収納部73cの上下には、四角い横長の長孔75、76が形成され、同長孔75、76内には断面四角形状をなすガイド筒体75a、76aが形成されている。前記ガイド筒体75a、76aは前記後側側壁73aに対して前後両側に突出するように形成されている。

【0071】図14に示すように、前記貫通孔73bには円筒部80aを有する回動体80の先端部が前方から回動可能に挿通されている。前記回動体80の後端外周には係止爪80bが形成され、同係止爪80bは貫通孔73bの開口縁部に係合されている。前記回動体80はケース本体73に対して回動可能でありながら、前記係止爪80bと貫通孔73bの開口縁部との係合、及び前記ピニオン収納部73cの先端面と後述するフランジ部81aとの当接により、軸心O2への移動が規制されている。

【0072】図14、18(a)に示すように、前記回動体80の外周部において、ピニオン収納部73cに対応する部分には、ピニオンとしてのピニオン部80cが全周に亘り形成されている。

【0073】さらに、回動体80の外周部において、ピニオン部80cの前方には冠歯車状の節度面部81が隣接して形成されている。前記節度面部81は前記ピニオン収納部73cの先端面に当接されるフランジ部81a

と、前記ピニオン収納部73cの外周の外方に位置する節度面81bとを備えている。前記節度面81bを備えた回動体80は第2節度面部材に相当する。同節度面81bは、フランジ部81aの外周で、かつ後側側面に形成されている。なお、節度面81bの詳しい説明は後述する。

【0074】前記回動体80の前端近傍外周には、係止爪80dが形成されている。図15(b), 18に示すように、前記回動体80の前端部には周方向に亘り3つの係合溝80eが等間隔で形成されている。

【0075】図10, 16(a), 16(b), 17に示すように、前記回動体80の上方には、下面にラック部82aを有する往復動体82が設けられている。前記ラック部82aはラックに相当する。前記往復動体82は、後側側面に後方へ向け突出する被ガイド部82bが左右両側に形成され、図17に示すように、動両被ガイド部82bにてガイド筒体75aに挿入されている。同被ガイド部82bの先端部には係止爪82cが形成され、前記係止爪82cはガイド筒体75aの端部に係合されている。前記往復動体82のラック部82aは、前記ピニオン収納部73cの上部開口部を介して前記回動体80のピニオン部80cと噛合されている。前記回動体80がその軸心O2を中心て正逆回動すると、往復動体82はその正逆回動に応じてガイド筒体75aに沿って直線的に往復動される。前記往復動体82の上部には前方へ向け突出するケーブル取付部82dが形成されている。

【0076】前記ケース本体73の後側側壁73aの左上には、一対の挟着片を備えたケーブル保持部86が前方へ向けて突出形成され、同ケーブル保持部86は両挟着片にてケーブル87のアウターケーブル87aを挟着している。前記アウターケーブル87aの内部にはインナーケーブル87bが摺動可能に配置され、同インナーケーブル87bの先端部は、往復動体82のケーブル取付部82dに回動可能に連結されている。前記インナーケーブル87bは動力伝達ケーブルに相当する。そして、前記往復動体82の往復移動量に応じてインナーケーブル87bはアウターケーブル87a内を摺動するようになっている。

【0077】図9, 15(a)に示すように、前記回動体80の前方には、連結部材84が設けられている。前記連結部材84の後部は筒状部84aとなっており、同筒状部84aの後端部外周には、軸心O2を中心て放射状に延びる3つの係止片84bが突出形成されている。図15(b)に示すように、同係止片84bは前記回動体80の係合溝80eと係合し、前記回動体80と連結部材84は軸心O2を中心として、ともに回動するようにならっている。

【0078】図9, 15(a)に示すように、前記連結部材84の前部は有底円筒状の皿部84cが形成され、

同皿部84cの中央部には前記筒状部84aの中空部と連通する円形状の貫通孔が形成されている。さらに、前記皿部84cの外周には、その周壁の一部が外方へ向け突出しており、前記突出した周壁により係止部84dを形成している。

【0079】前記連結部材84の前方には略ドーナツ状の回動ノブ85が設けられている。前記回動ノブ85は風の吹き出し口を変更する変更操作部材、回動操作可能な変更操作部材、及び第1変更操作部材に相当する。

10 【0080】前記回動ノブ85の後側側面には、前記連結部材84の外形形状と同様の係合凹部85a(図15(a)参照)が形成され、同係合凹部85aには、前記連結部材84の皿部84c及び係止部84dが係合されている。このため、回動ノブ85と連結部材84は軸心O2を中心として、ともに回動するようにならっている。同係止片84bは前記回動体80の係合溝80eと係合し、前記回動体80と連結部材84は軸心O2を中心として、ともに回動するようにならっている。

【0081】ところで、図12に示すように、前記ケース本体73の後側側壁73aにおいて、前記貫通孔73bの外周には、後方へ向けて断面C形形状のピニオン収納部73dが突出形成されている。前記ピニオン収納部73dの周壁は、軸心O2を中心として円弧状に形成され、周壁の下部は開口されている。

【0082】図13, 14に示すように、前記回動体80の円筒部80aには、回動部材90に備えられた軸部90aが後方から回動可能に挿通されている。前記軸部90aにおける長手方向中間部の外周には、係止爪90bが形成され、同係止爪90bは前記回動体80の円筒部80a内に設けられた係合段部80fに係合されている。前記回動部材90は回動体80に対して相対的にその軸心の回りで回動可能とされている。

【0083】前記回動部材90において、軸部90aの後端部にはピニオンとしてのピニオン部90cが形成され、同ピニオン部90cは前記ケース本体73のピニオン収納部73dに収納されている。

【0084】さらに、図13, 18(b)に示すように、回動部材90において、ピニオン部90cの後端部には冠歯車状の節度面部91が形成されている。前記節度面部91は前記ピニオン収納部73dの先端面に当接されるフランジ部91aと、前記ピニオン収納部73dの外周外方に位置する節度面91bとを備えている。前記節度面91bを備えた回動部材90は第3節度面部材に相当する。

【0085】同節度面91bは、フランジ部91aの外周で、かつ前側側面に形成されている。節度面91bと前記節度面81bは、内外径が同一径とされ、かつ後側側壁73aを挟んで対向するように配置されている。なお、節度面91bの詳しい説明は後述する。また、回動部材90において、軸部90aの前端部には四角柱状の

連結部90dが形成されている。

【0086】図9, 10, 13に示すように、前記回動部材90の前方には略円柱状の回動ノブ98が設けられている。前記回動ノブ98は温度を変更する変更操作部材、回動操作可能な変更操作部材、及び第2変更操作部材に相当する。前記回動ノブ98の後側側面には、前記回動部材90の連結部90dの外形形状と同様の係合凹部98aが形成され、同係合凹部98aには前記連結部90dが係合されている。このため、回動ノブ98と回動部材90は軸心O2を中心として、ともに回動する。回動ノブ98は回動ノブ85の前側側面よりも前方に突出して配置されている。

【0087】図10, 17に示すように、前記回動部材90の下方には、前記往復動体92が設けられている。なお、この往復動体92は前記往復動体82と同一形状をなす部材であるが、説明の便宜上、本実施形態では符号を変更している。従って、往復動体92を構成するその他の部分は、往復動体82におけるその他の部分の1桁の末尾番号を共通とし、90番台を付している。なお、この往復動体92をコントローラユニット71に組み付けた際には、ラック部92aは往復動体92において上方に位置し、被ガイド部92bは往復動体92において前方に位置するように配置されている。前記ラック部92aはラックに相当する。

【0088】そして、前記両被ガイド部92bはガイド筒体76aに挿入され、前記係止爪92cはガイド筒体76aの端部に係合されている。前記往復動体92のラック部92aは、前記ピニオン収納部73dの下部開口部を介して前記回動部材90のピニオン部90cと噛合されている。

【0089】なお、図17では、ラック部92aはピニオン部80cと噛合しているように見えるが、本実施形態では、ピニオン部90cは、ピニオン部80cと同形、すなわち、同径で歯数が同じため、ピニオン部80cの陰に隠れて見えない。

【0090】前記回動部材90がその軸心O2を中心に正逆回動すると、往復動体92はその正逆回動に応じてガイド筒体76aに沿って直線的に往復動される。図12, 17に示すように、前記ケース本体73の後側側壁73aの右下には、一对の挟着片を備えたケーブル保持部96が後方へ向けて突出形成され、同ケーブル保持部96の両挟着片にてケーブル97のアウターケーブル97aが挟着されている。前記アウターケーブル97aの内部にはインナーケーブル97bが摺動可能に配置され、同インナーケーブル97bの先端部は、往復動体92のケーブル取付部92dに回動可能に連結されている。前記インナーケーブル97bは動力伝達ケーブルに相当する。そして、前記往復動体92の往復移動量に応じてインナーケーブル97bはアウターケーブル97a内を摺動するようになっている。

【0091】図11, 12, 19に示すように、前記ケース本体73の後側側壁73aにおいて、前記貫通孔73bの右側近傍には円筒状の節度部材収納部101が前後に突出するように形成されている。節度部材収納部101内には、円形状の貫通孔100が形成されている。

【0092】前記節度部材収納部101の前後両端部には、スリット101a, 101bが形成され、それぞれ前記節度面部81の節度面81b及び節度面部91の節度面91bが移動可能に係入されている。

10 【0093】前記節度部材収納部101の貫通孔100内において、共通の付勢部材としてのスプリング102が収納され、同スプリング102の前後両側には第2節度部材としての節度ボール103、及び第3節度部材としての節度ボール104が収納されている。前記回動体80及び節度ボール103にて第2節度機構が構成され、前記回動部材90及び節度ボール104にて第3節度機構が構成されている。

【0094】前記節度ボール103, 104は、スプリング102の付勢にて回動体80の節度面81b、回動部材90の節度面91bに対して常に圧接するようにされている。図15(b), 18(a)に示すように、前記回動体80の節度面81bには5つの節度凹部105a, 105b, 105c, 105d, 105eが等間隔に形成され、同節度凹部105a～105eは前記節度ボール103と係合するようにされている。また、前記回動部材90の節度面91bには複数の節度凹部106が等間隔に形成され、同節度凹部106は前記節度ボール104と係合するようにされている。

【0095】ところで、図9, 11, 20に示すよう30に、前記ケース本体73の後側側壁73aにおいて、左端部には前記軸心O2を中心とした円弧状のガイド壁110が前方へ向け突出形成されている。前記ガイド壁110の上下両端近傍には節度凹部110a, 110bが形成されている。

【0096】そして、前記回動体80の円筒部80aにおいて、前端部近傍の外周には、略T字形の揺動部材107が設けられている。前記揺動部材107の基礎部には、リング部107aが形成され、同リング部107aが前記円筒部80aの外周に回動自在に遊嵌されている(図9, 14参照)。前記リング部107aは前記係止爪80dにより、揺動部材107の前後方向の移動を規制するようされている。

【0097】前記揺動部材107の先端部には円弧状の被ガイド部107bが形成されおり、同被ガイド部107bは前記ガイド壁110に対して近接して揺動するようになっている。

【0098】図20, 21(a), 21(b)に示すように、前記被ガイド部107bの先端面には弾性を有する金属からなる節度片108が固定されている。前記節度片108の先端部近傍には軸心O2を中心として放射

方向へ向け突出した108aが形成されており、同突部108aは片持ち梁状態の節度片108の付勢にて、前記ガイド壁110に対して常に圧接されている。前記揺動部材107の揺動により、突部108aは前記ガイド壁110の節度凹部110a, 110bに選択的に係合するようになっている。

【0099】前記被ガイド部107bの前側面にはスライドノブ109が突出形成され、揺動部材107の基端と先端とのなす中間部にはケーブル取付部107cが形成されている。前記スライドノブ109は外気を車内に取り込むか否かを変更する変更操作部材に相当する。前記スライドノブ109は前記軸心O2を中心として円弧状にスライド操作可能とされている。

【0100】前記ケース本体73の後側側壁73aの左下近傍には、一対の挿着片を備えたケーブル保持部111が前方へ向け突出形成され、同ケーブル保持部111の両挿着片にてケーブル112のアウターケーブル112aが挿着されている。前記アウターケーブル112aの内部にはインナーケーブル112bが摺動可能に配置され、同インナーケーブル112bの先端部は、揺動部材107のケーブル取付部107cに回動可能に連結されている。そして、前記揺動部材107の往復揺動量に応じてインナーケーブル112bはアウターケーブル112a内を摺動するようになっている。

【0101】ところで、図10に示すように、前記ケース本体73の後側側壁73aの右側端部近傍には、上下方向に延びるスリット113が形成されている。前記後側側壁73aにおけるスリット113が形成された部位には、後方からスライドレバーボックス114が図示しないネジを介して固定されている。前記スライドレバーボックス114はレバー部114aを備えており、同レバー部114aは前記スリット113を介して前方へ突出されている。前記レバー部114aは上下方向にスライド移動可能とされている。

【0102】図8, 9に示すように、前記ケース本体73の右側にはスイッチボックス74が固定され、同スイッチボックス74には3つの押圧スイッチ74a, 74b, 74cが前側部に設けられている。前記ケース本体73の前側部には、意匠板72が固定されており、同意匠板72は、ケース本体73の外形形状より右部が長く形成されている。

【0103】図7に示すように、前記意匠板72には、回動ノブ取付孔120、スライドノブ取付孔121、ガイド孔122、スイッチ取付孔123が形成されている。前記回動ノブ取付孔120は円形状の孔であり、孔の中心が前記軸心O2と一致するようになっている。前記意匠板72aにおいて、回動ノブ取付孔120の外周でかつ前記軸心O2に対して上方の位置には、指示マークSが設けられている。前記回動ノブ取付孔120内には、回動ノブ85及び回動ノブ98が配置され、同回動

ノブ85及び回動ノブ98は意匠板72の意匠面72aに対して突出するように配置されている。

【0104】前記回動ノブ98の前側側面には周方向に亘り、第1温度域マーク128a、第2温度域マーク128bが設けられている。第1温度域マーク128aの反時計回り方向側端部Aと、第2温度域マーク128bの時計回り側端部Bとは離間され、第1温度域マーク128aの時計回り方向側端部Cと、第2温度域マーク128bの反時計回り側端部Dとが近接されている。

10 【0105】前記回動ノブ98は、指示マークSと第1温度域マーク128aが対向する位置から、指示マークSと第2温度域マーク128bが対向する位置までの範囲を回動可能とされている。すなわち、ガイド筒体76aが往復動体92の被ガイド部92bを許容する範囲が回動ノブ98の回動範囲とされている。

【0106】前記回動ノブ85の前側側面には周方向に亘り、第1風吹出口マーク124a～第5風吹出口マーク124eが等間隔で設けられている。前記回動ノブ85は指示マークSと第1風吹出口マーク124aが対向する位置から、指示マークSと第5風吹出口マーク124eが対向する位置までの範囲を回動可能とされている。すなわち、ガイド筒体75aが往復動体82の被ガイド部82bを許容する範囲が回動ノブ85の回動範囲とされている。

【0107】前記意匠板72の意匠面72aにおいて、回動ノブ取付孔120の左側には、軸心O2を中心とした円弧状のスライドノブ取付孔121が形成され、同スライドノブ取付孔121内には前記スライドノブ109が配置されている。前記スライドノブ109は、意匠板72の意匠面72aに設けられた空気循環位置125a、外気吸入位置125bを選択的に示すようにスライド操作可能とされている。

【0108】そして、意匠板72の意匠面72aにおいて、前記回動ノブ取付孔120の右側には、上下方向に沿ってガイド孔122が形成され、同ガイド孔122には前記スライドレバーボックス114のレバー部114aが後方から前方へ挿通されている。前記レバー部114aの先端部には、風量を変更する変更操作部材としてのスライドノブ126が固定されている。

40 【0109】前記スライドノブ126は意匠板72の意匠面72aに設けられたOFF位置127a、第1風量位置127b～第3風量位置127dを選択的に示すようにスライド移動可能とされている。

【0110】前記意匠板72の意匠面72aにおいて、右側端部近傍には上下方向に長いスイッチ取付孔123が形成され、同スイッチ取付孔123にはスイッチボックス74の押圧スイッチ74a～74cが後方から前方へ向け挿通されている。

【0111】次に、前記回動ノブ98を操作した際における他の部材の作動関係を説明する。前記回動ノブ98

を正逆回動させると回動部材90はその回動ノブ98の正逆回動に伴って正逆回動する。すると、回動部材90における節度面91bの節度凹部106は前記節度ボール104と相対した際に係合し、回動ノブ98に節度感を与える。

【0112】さらに、回動部材90が正逆回動すると、その正逆回動に応じて往復動体92は直線的に往復動される。前記回動ノブ98の第1温度域マーク128aにおける端部Aが指示マークSと対向した際には、図17に示すように、往復動体92は二点鎖線で示す位置に位置する。また、前記回動ノブ98の第2温度域マーク128bにおける端部Bが指示マークSと対向した際には、図17に示すように、往復動体92は破線で示す位置に位置する。

【0113】そして、往復動体92の左右方向の位置に応じて、ケーブル97のインナーケーブル97bは進退長さが所定長さとされる。このように、回動ノブ98の回動位置に応じたインナーケーブル97bの進退長さは、図示しないコントローラユニット71以外の他の装置に対して機械的に伝達され、第1温度域マーク128a、第2温度域マーク128bに応じた処理が行われる。

【0114】次に、前記回動ノブ85を操作した際に他の部材の作動関係を説明する。前記回動ノブ85を正逆回動させると、回動体80は連結部材84を介してその回動ノブ85の正逆回動に伴って正逆回動する。この際、回動ノブ85の第1風吹出口マーク124a～第5風吹出口マーク124eが指示マークSと対向した際には、回動体80の節度凹部105a～105eは節度部材収納部101内の節度ボール103と係合する。

【0115】また、回動体80が正逆回動すると、その正逆回動に応じて往復動体82は直線的に往復動される。前記回動ノブ85の第1風吹出口マーク124aが指示マークSと対向した際には、図17に示すように、往復動体82は二点鎖線で示す位置に位置する。また、前記回動ノブ85の第5風吹出口マーク124eが指示マークSと対向した際には、図17に示すように、往復動体82は実線で示す位置に位置する。

【0116】そして、往復動体82の左右方向の位置に応じて、ケーブル87のインナーケーブル87bは進退長さが所定長さとされる。このように、回動ノブ85の回動位置に応じたインナーケーブル87bの進退長さは、図示しないコントローラユニット71以外の他の装置に対して機械的に伝達され、第1風吹出口マーク124a～第5風吹出口マーク124eに応じた処理が行われる。

【0117】次に、前記スライドノブ109を操作した際に他の部材の作動関係を説明する。前記スライドノブ109をスライド移動させると、揺動部材107は軸心O2を中心として回動する。この際、スライドノ

ブ109が空気循環位置125aを示すと、節度片108の突部108aはガイド壁110の節度凹部110aと係合し、ケーブル112のインナーケーブル112bは、このときの揺動部材107の位置に応じて進退長さが所定長さとされる。

【0118】また、スライドノブ109が外気吸入位置125bを示すと、節度片108の突部108aはガイド壁110の節度凹部110bと係合し、ケーブル112のインナーケーブル112bはこのときの揺動部材107の位置に応じて進退長さが所定長さとされる。

【0119】このように、スライドノブ109のスライド位置に応じたインナーケーブル112bの進退長さは、図示しないコントローラユニット71以外の他の装置に対して機械的に伝達され、前記空気循環位置125a、外気吸入位置125bに応じた処理が行われる。

【0120】次に、前記スライドノブ126を操作した際に他の部材の作動関係を説明する。前記ガイド孔122にガイドされたレバー部114aにより、スライドノブ126は上下方向にスライド移動可能される。

【0121】そして、スライドノブ126がOFF位置127a、第1風量位置127b～第3風量位置127dに位置すると、スライドレバーボックス114はその位置に応じた電気信号を図示しないコントローラユニット71以外の他の装置に出力する。

【0122】次に、本実施形態のコントローラユニット71の効果について説明する。

(1) 本実施形態のコントローラユニット71では、意匠板72の意匠面72aにおいて、軸心O2を中心(回動ノブ85, 98を中心)として円弧状にスライド可能なスライドノブ109を配置した。

【0123】従って、スライドノブ109を回動ノブ85, 98に対して関係を持たさずに配置したコントローラユニットと比べ、コントローラユニット11は意匠面12aの配置スペースを小さくでき、この結果、コントローラユニット11を前述のコントローラユニットと比べ小型化できる。また、回動ノブ85, 98の軸心O2を中心として円弧状にスライド移動可能にスライドノブ109を配置したため、見た目が美しい。

【0124】(2) 本実施形態のコントローラユニット71では、回動ノブ85と回動ノブ98を重ね合わせ、かつ回動ノブ85の軸心と、回動ノブ98の軸心を同一の軸心である軸心O2とした。従って、回動ノブ85と回動ノブ98を別々で配置したコントローラユニットと比べ、コントローラユニット11は意匠面12aの配置スペースを小さくでき、この結果、コントローラユニット11を前述のコントローラユニットと比べ小型化できる。

【0125】(3) 本実施形態のコントローラユニット71では、節度ボール103と節度ボール104は共通の一箇のスプリング102にて、節度面81b及び節度

面91bに対してそれぞれ圧接するようにした。ところで、従来技術のコントローラユニット181は、一对の節度部材(図示しない)と節度面部材(図示しない)に対して、節度部材を節度面部材に付勢するための付勢部材(図示しない)を一個設けていた。従って、コントローラユニット71は従来技術のコントローラユニット181と比べて、部品点数(スプリング102)を削減できる。

【0126】(4)本実施形態のコントローラユニット71では、回動ノブ85を正逆回動させると、ピニオン部80cも同様に正逆回動し、そのピニオン部80cの正逆回動により往復動体82を直線的に往復動するようにした。また、回動ノブ98を正逆回動させると、ピニオン部90cも同様に正逆回動し、そのピニオン部90cの正逆回動により往復動体92を直線的に往復動するようにした。そのため、往復動体82, 92に連結されたインナーケーブル87b, 97bも直線的に移動する。

【0127】ところで、従来技術のコントローラユニット191は、回動ノブ193a～195aを正逆回動させると、動力変換部材193c～195cが円弧を描くように往復揺動する。そのため動力変換部材193c～195cに連結された動力伝達ケーブル193e～195eには回動ノブ193a～195aの回転運動が正確に伝わりにくかった。

【0128】従って、コントローラユニット71は往復動体82, 92が直線的に往復動するため、従来技術のコントローラユニット191と比べ、インナーケーブル87b, 97bに回動ノブ85, 98の回動運動を正確に伝達できる。

(他の実施形態) なお、上記各実施形態は以下のような他の実施形態に変更して具体化してもよい。

【0129】・前記第1実施形態において、第1節度部材として節度片33～35を採用していたが、スプリング等の付勢部材にて付勢される節度ボール又は節度ピンなどを採用してもよい。

【0130】・前記第1実施形態において、前記節度片33～35は、弾性を有する金属で形成していたが、弾性を有するものであれば、合成樹脂などにより形成してもよい。

【0131】・前記第1実施形態において、節度面形成部36の節度面37に16個の節度凹部38a, 38b, 39a～39i, 40a～40eを形成していたが、節度凹部の数はいくつ形成してもよい。

【0132】・前記第1実施形態において、軸心O1を中心とした同一仮想円E上をスライド移動可能に3つのスライドノブ61～63を設けていた。これに限らず、軸心O1を中心とした同一仮想円E上をスライド移動可能なスライドノブを2つ又は4つ以上設けてもよい。

【0133】・前記第1実施形態において、回動ノブ6

0を風量を変更する変更操作部材、スライドノブ61を外気を車内に取り込むか否かを変更する変更操作部材、スライドノブ62を温度を変更する変更操作部材、スライドノブ63を風の吹き出し口を変更する変更操作部材としていた。これに限らず、回動ノブ60及びスライドノブ61～63を、温度を変更する変更操作部材、風量を変更する変更操作部材、風の吹き出し口を変更する変更操作部材、外気を車内に取り込むか否かを変更する変更操作部材のうち、それぞれ何れかに相当するように組み合わせてもよい。

【0134】・前記第2実施形態において、第2, 第3節度部材として節度ボール103, 104を採用していたが、これに限らず、第2, 第3節度部材として節度ピンを採用してもよい。

【0135】・前記第2実施形態において、付勢部材としてスプリング102を採用していたが、これに限らず、ゴム、弾性材などを採用してもよい。要は、節度ボール103, 104を節度面81b, 91bに対して圧接させるものであれば何でもよい。

【0136】・前記第2実施形態において、回動ノブ85を風の吹き出し口を変更する変更操作部材、回動ノブ98を温度を変更する変更操作部材、スライドノブ109を外気を車内に取り込むか否かを変更する変更操作部材、スライドノブ126を風量を変更する変更操作部材としていた。これに限らず、回動ノブ85, 98、スライドノブ109, 126を、温度を変更する変更操作部材、風量を変更する変更操作部材、風の吹き出し口を変更する変更操作部材、外気を車内に取り込むか否かを変更する変更操作部材のうち、それぞれ何れかに相当するように組み合わせてもよい。

【0137】
【発明の効果】請求項1～6に記載の発明によれば、スライド操作可能な変更操作部材と回動操作可能な変更操作部材とを別々で設けた場合と比べ、変更操作部材の配置スペースを小さくでき、この結果、車両用操作スイッチユニットを小型化できる。

【0138】請求項2に記載の発明によれば、回動操作可能な変更操作部材の回動軸心を中心として複数のスライド操作可能な変更操作部材を設けるため、さらに変更操作部材の配置スペースを少なくでき、この結果、車両用操作スイッチユニットをさらに小型化できる。

【0139】請求項3に記載の発明によれば、各第1節度部材毎に第1節度面部材をそれぞれ独立して設ける必要がなく、構造を単純化できる。請求項4に記載の発明によれば、さらに変更操作部材の配置スペースを少なくでき、この結果、車両用操作スイッチユニットをさらに小型化できる。

【0140】請求項5に記載の発明によれば、車両用操作スイッチユニットの部品点数を削減できる。請求項6に記載の発明によれば、ラックは直線的に往復動するた

め、例えばラックが円弧を描くように往復動する場合と比べて、回動操作可能な変更操作部材の回動運動を動力伝達ケーブルに正確に伝達できる。

【図面の簡単な説明】

【図1】 第1実施形態におけるコントローラユニットの正面図。

【図2】 第1実施形態におけるコントローラユニットの分解斜視図。

【図3】 図1におけるA-A線矢視部分断面図。

【図4】 (a)は、回動レバーとケーブルとの作動関係を示す概略説明図。(b)は、節度面の節度凹部を示す説明図。

【図5】 図3におけるB-B線矢視部分断面図。

【図6】 第1実施形態における基板の正面図。

【図7】 第2実施形態におけるコントローラユニットの正面図。

【図8】 第2実施形態におけるコントローラユニットの分解斜視図。

【図9】 第2実施形態におけるコントローラユニットの分解斜視図。

【図10】 第2実施形態におけるコントローラユニットの分解斜視図。

【図11】 第2実施形態におけるケース本体の正面図。

【図12】 第2実施形態におけるケース本体の背面図。

【図13】 第2実施形態における回動ノブ98と回動部材との関係を示す部分断面図。

【図14】 第2実施形態における回動ノブ85と連結部材と回動体との関係を示す断面図。

【図15】 (a)は、図14のC-C線矢視における回動ノブ85と連結部の背面図。(b)は、図14におけるD-D線矢視断面図。

【図16】 (a)は、往復動体82の正面を示す斜視図。(b)は、往復動体82の背面を示す斜視図。

【図17】 第2実施形態における往復動体とピニオン部との関係を示す概略説明図。

【図18】 (a)は、回動体を示す斜視図。(b)は、回動部材を示す斜視図。

【図19】 第2実施形態における節度ボールと節度面との関係を示す概略説明図。

【図20】 第2実施形態における揺動部材とケーブルとの作動関係を示す概略説明図。

【図21】 (a)は、揺動部材と節度片との関係を示す部分斜視図。(b)は、突部と節度凹部との関係を示す部分拡大図。

【図22】 従来技術におけるコントローラユニット181を示す正面図。

【図23】 従来技術におけるコントローラユニット191を示す正面図。

【図24】 従来技術における回動ノブ機構を示す概略斜視図。

10 【符号の説明】

11, 71…車両用操作スイッチユニットとしてのコントローラユニット、33～35…第1節度部材としての節度片、

36…第1節度面部材としての節度面形成部、60…風量を変更する変更操作部材及び回動操作可能な変更操作部材としての回動ノブ、

61…外気を車内に取り込むか否かを変更する変更操作部材、及びスライド操作可能な変更操作部材としてのスライドノブ、

20 62…温度を変更する変更操作部材、及びスライド操作可能な変更操作部材としてのスライドノブ、

63…風の吹き出し口を変更する変更操作部材、及びスライド操作可能な変更操作部材としてのスライドノブ、80…第2節度面部材としての回動体、

80c, 90c…ピニオンとしてのピニオン部、82a, 92a…ラックとしてのラック部、

85…風の吹き出し口を変更する変更操作部材、及び回動操作可能な変更操作部材、及び第1変更操作部材としての回動ノブ、

30 87b, 97b…動力伝達ケーブルとしてのインナーケーブル、

90…第3節度面部材としての回動部材、

98…温度を変更する変更操作部材、及び回動操作可能な変更操作部材、及び第2変更操作部材としての回動ノブ、

102…付勢部材としてのスプリング、

103…第2節度部材としての節度ボール、

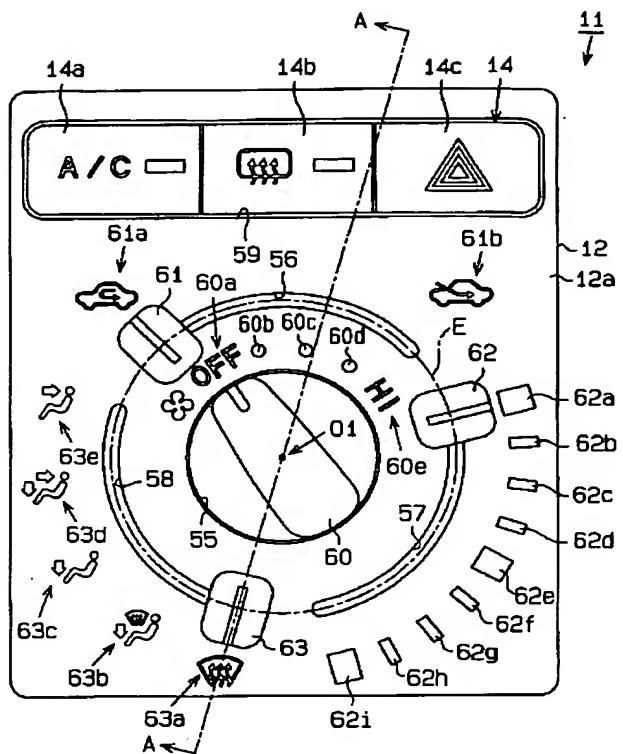
104…第3節度部材としての節度ボール、

109…外気を車内に取り込むか否かを変更する変更操作部材としてのスライドノブ、

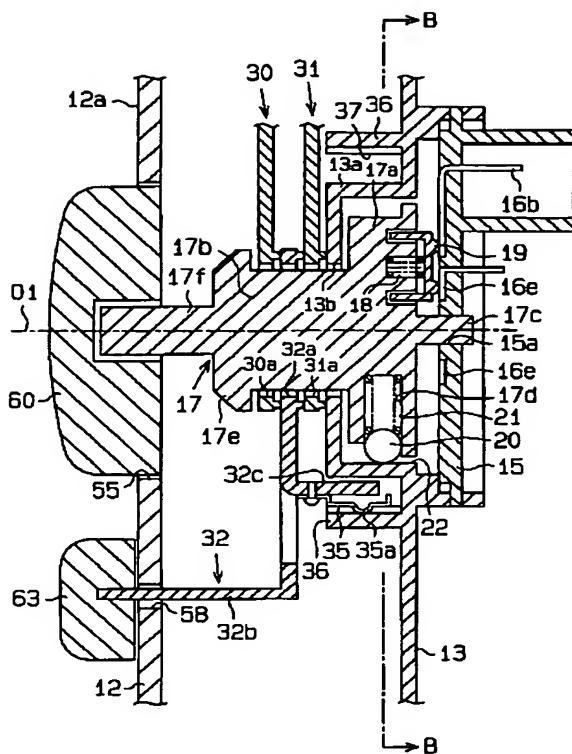
126…風量を変更する変更操作部材としてのスライドノブ、

O1, O2…回動軸心としての軸心、E…仮想円。

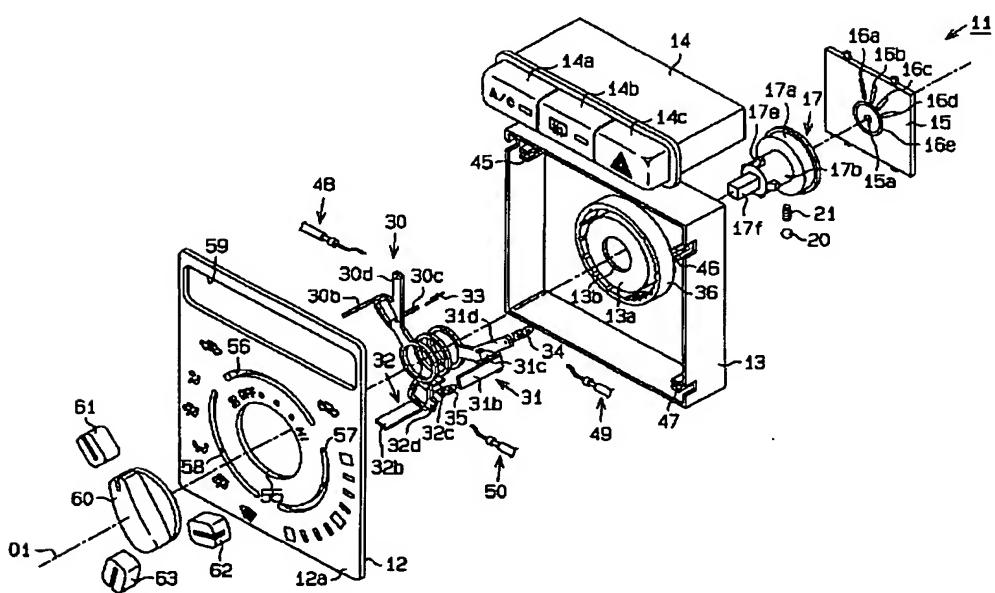
【图 1】



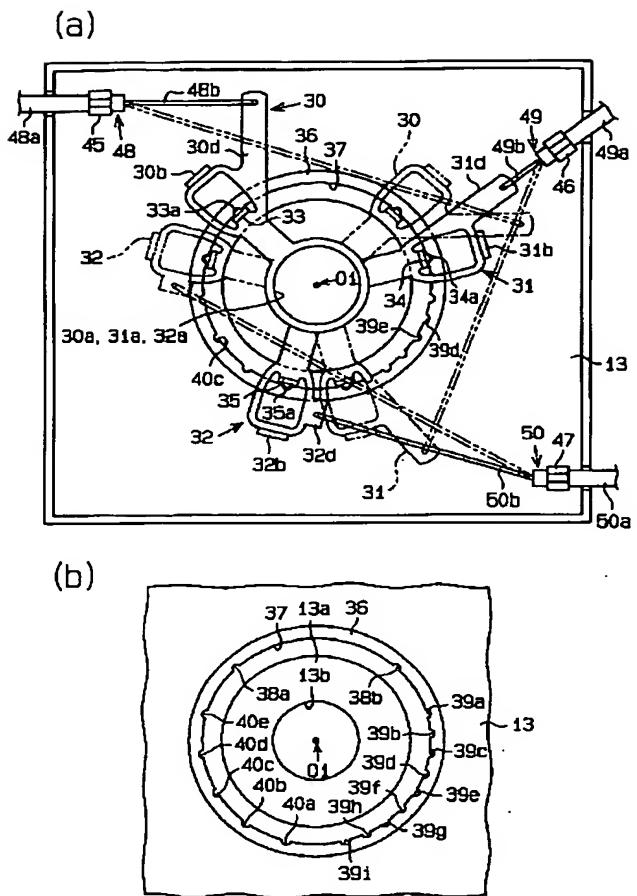
【図3】



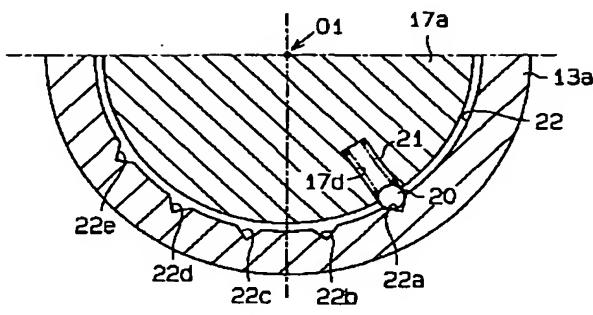
〔图2〕



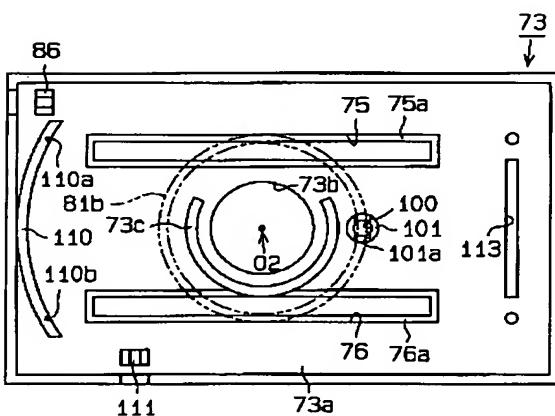
[图 4]



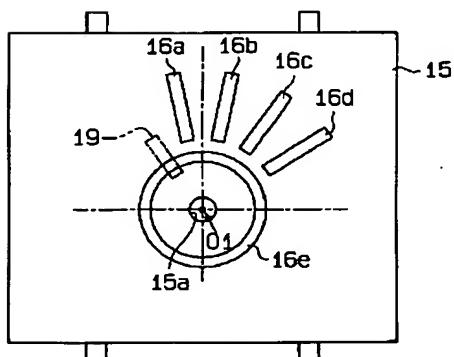
[5]



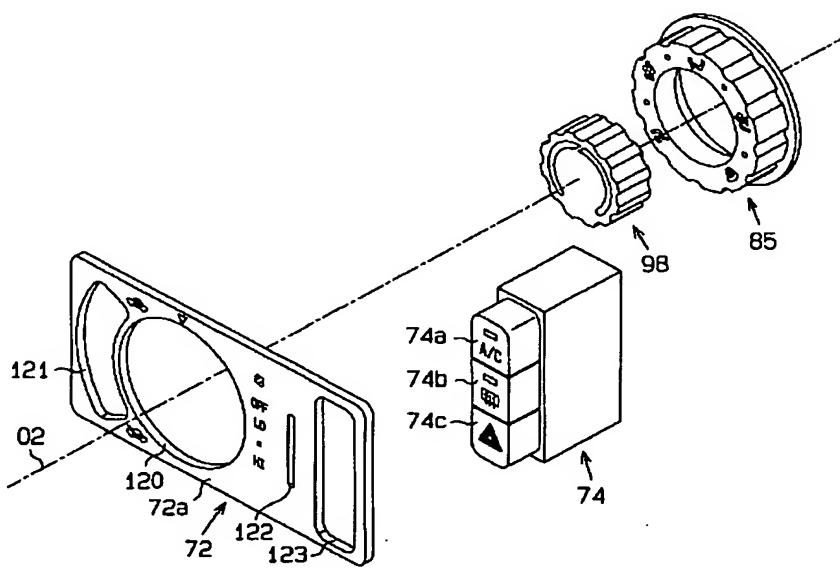
【四】



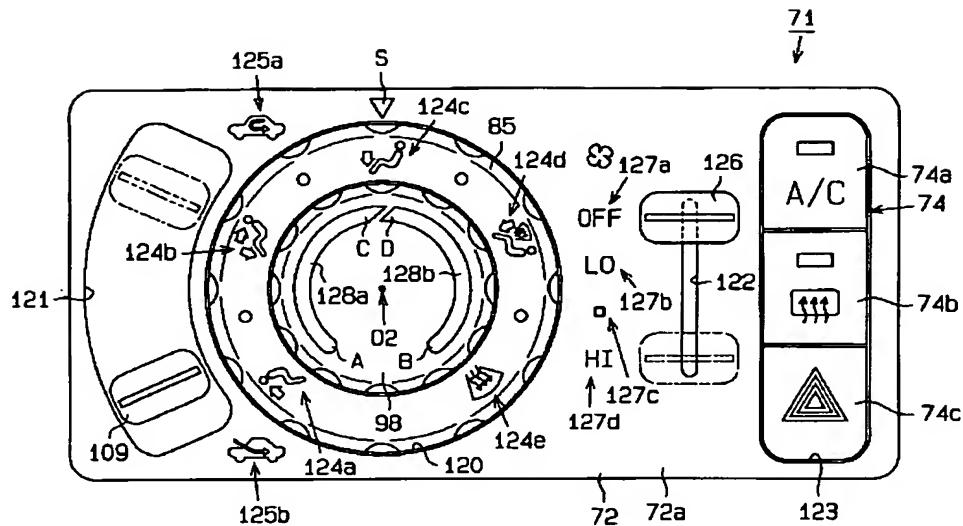
【図6】



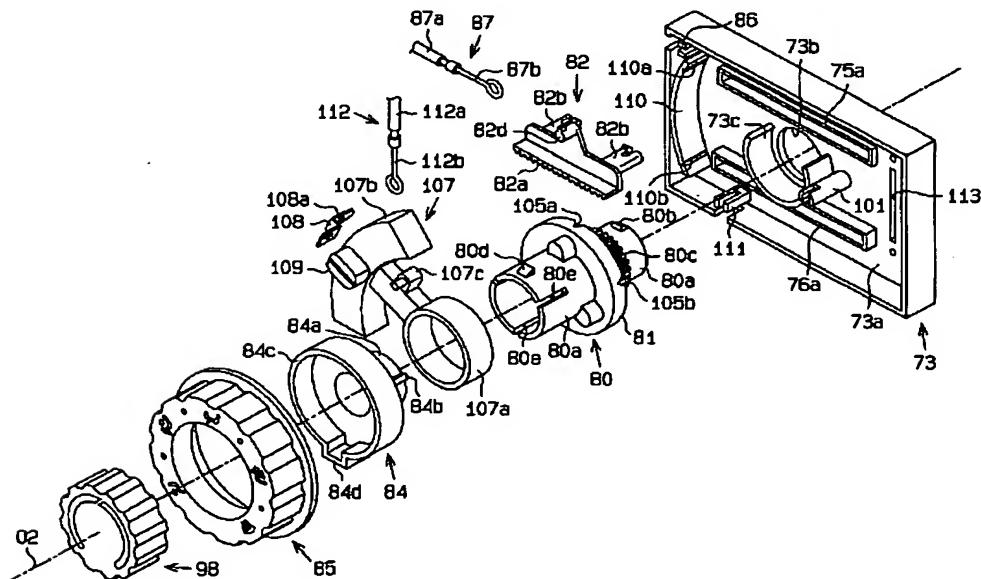
【图8】



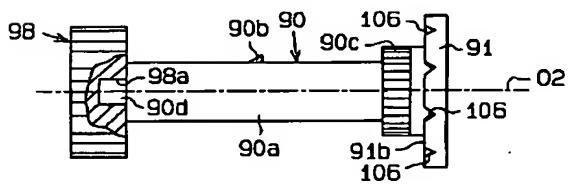
【四七】



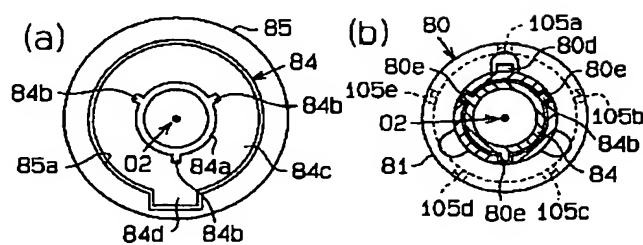
【図9】



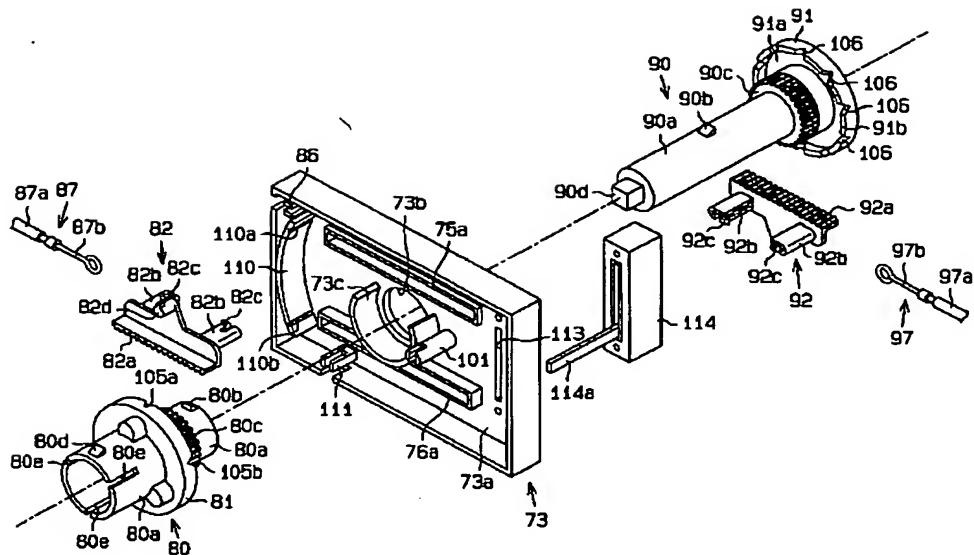
【四】



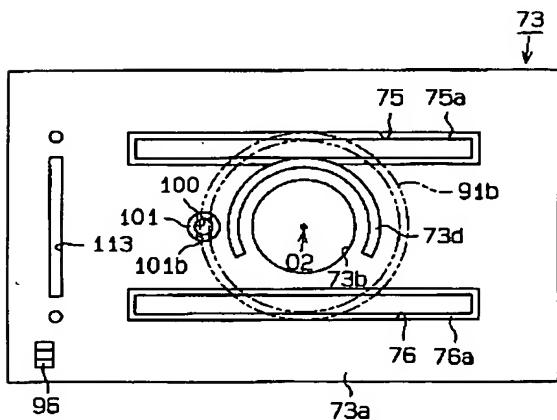
【图15】



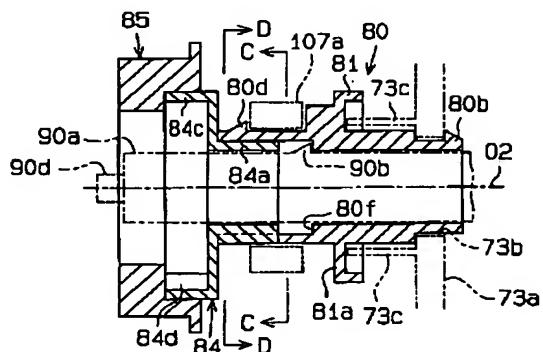
【图 10】



【四】

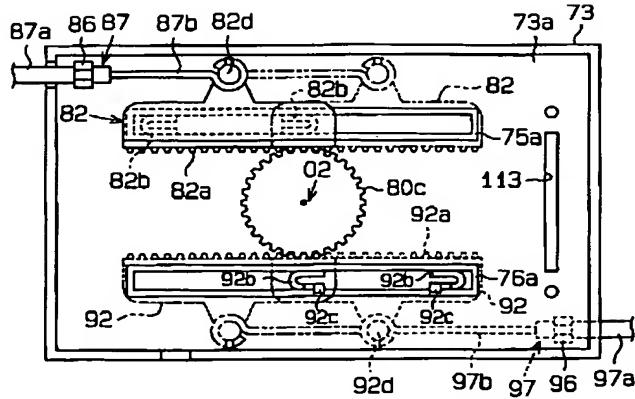
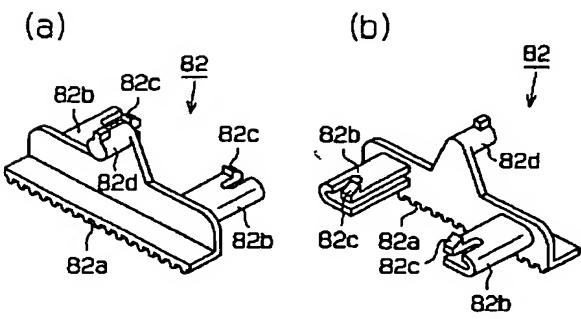


【四】

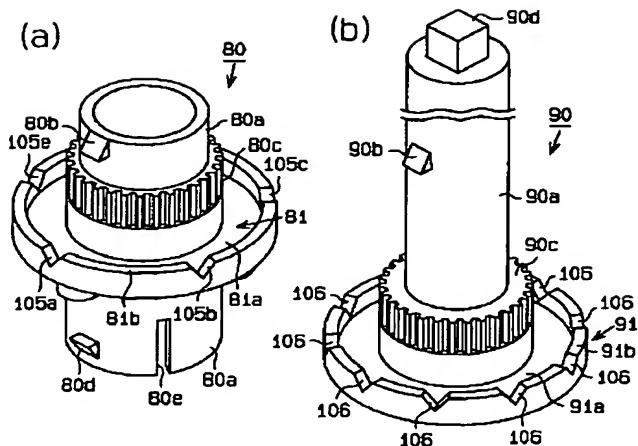


【图 17】

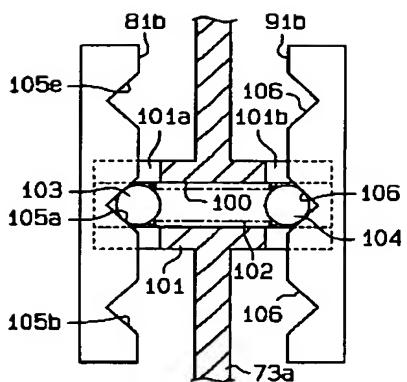
【図16】



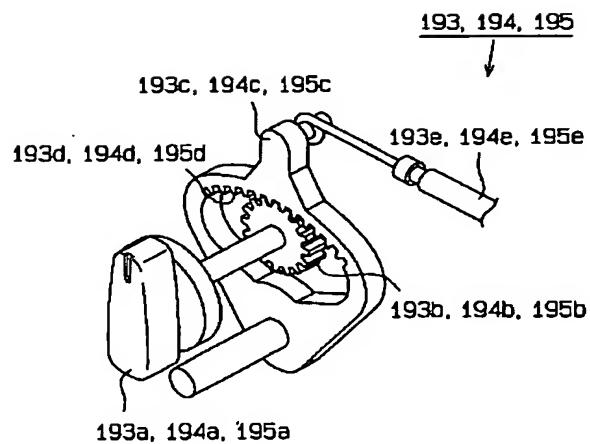
【図18】



【図19】



【図24】



フロントページの続き

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